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United States
Department of
Agriculture

Natural
Resources
Conservation
Service

# Montana Basin Outlook Report January 1, 1996

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# Basin Outlook Reports
## and
## Federal - State - Private
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See Attached List

*How forecasts are made*

Most of the annual streamflow in the Western United States originates as snowfall that has accumulated high in the mountains during winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when it melts. Predictions are based on careful measurements of snow water equivalent at selected index points. Precipitation, temperature, soil moisture and antecedent streamflow data are combined with snowpack data to prepare runoff forecasts. Streamflow forecasts are coordinated by Natural Resources Conservation Service and National Weather Service hydrologists. This report presents a comprehensive picture of water supply conditions for areas dependent upon surface runoff. It includes selected streamflow forecasts, summarized snowpack and precipitation data, reservoir storage data, and narratives describing current conditions.

Snowpack data are obtained by using a combination of manual and automated SNOTEL measurement methods. Manual readings of snow depth and water equivalent are taken at locations called snow courses on a monthly or semi-monthly schedule during the winter. In addition, snow water equivalent, precipitation and temperature are monitored on a daily basis and transmitted via meteor burst telemetry to central data collection facilities. Both monthly and daily data are used to project snowmelt runoff.

Forecast uncertainty originates from two sources: (1) uncertainty of future hydrologic and climatic conditions, and (2) error in the forecasting procedure. To express the uncertainty in the most probable forecast, four additional forecasts are provided. The actual streamflow can be expected to exceed the most probable forecast 50% of the time. Similarly, the actual streamflow volume can be expected to exceed the 90% forecast volume 90% of the time. The same is true for the 70%, 30%, and 10% forecasts. Generally, the 90% and 70% forecasts reflect drier than normal hydrologic and climatic conditions; the 30% and 10% forecasts reflect wetter than normal conditions. As the forecast season progresses, a greater portion of the future hydrologic and climatic uncertainty will become known and the additional forecasts will move closer to the most probable forecast.

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United States Department of Agriculture
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Bozeman, Montana

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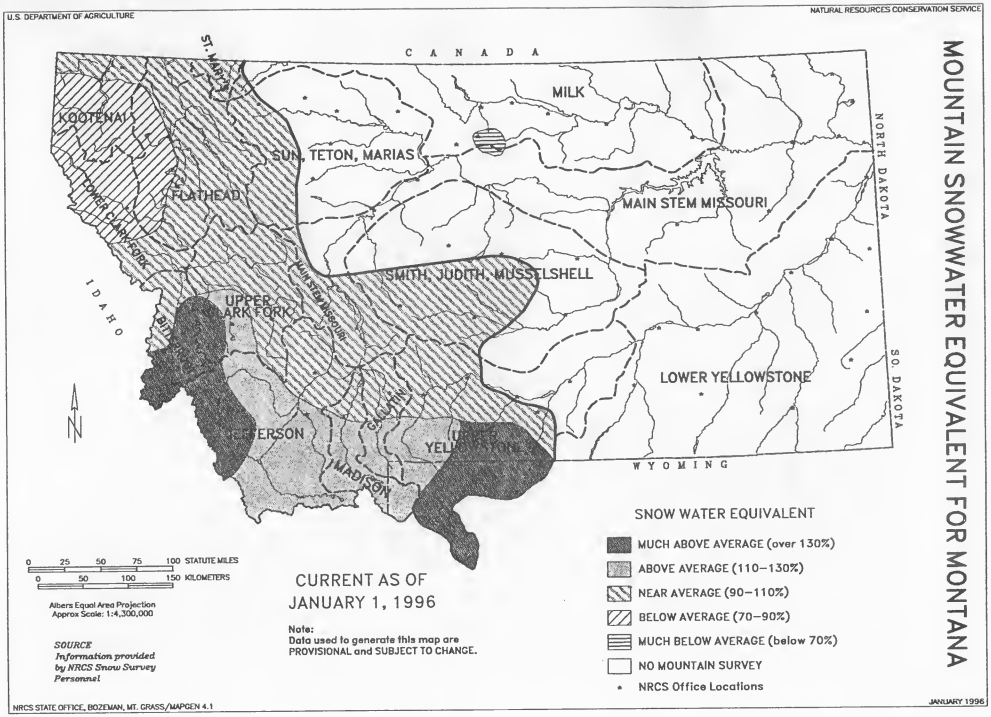
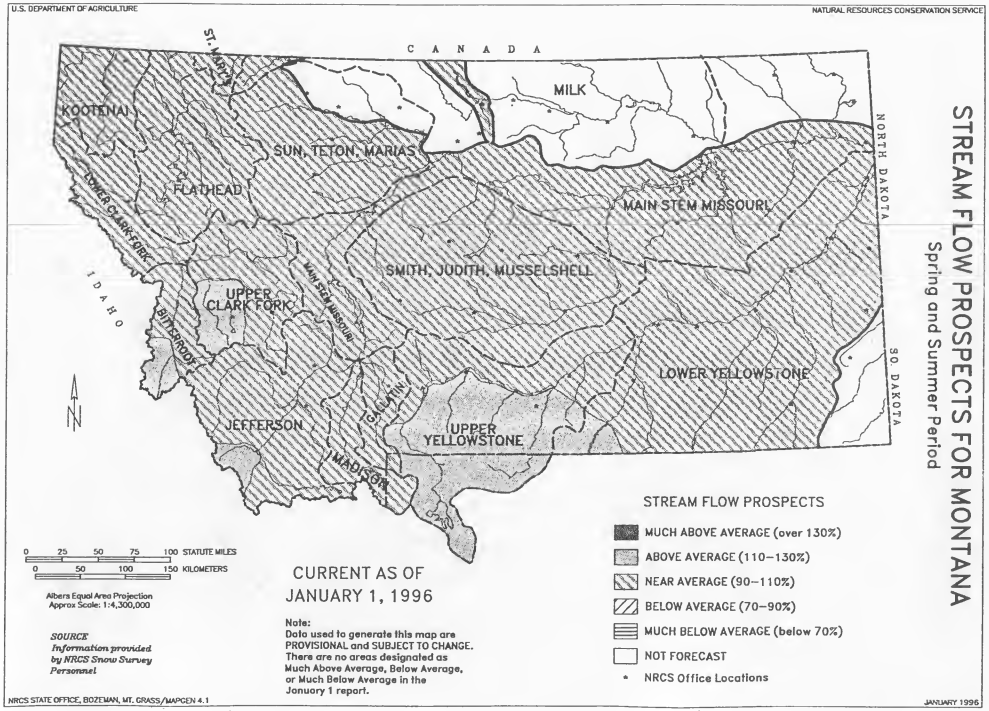

U.S. DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
MOUNTAIN SNOWWATER EQUIVALENT FOR MONTANA
CANADA
ST. MARY
MILK
KOOTENAI
SUN, TETON, MARIAS
FLATHEAD
MAIN STEM MISSOURI
NORTH DAKOTA
SMITH, JUDITH, MUSSELSHELL
UPPER ARK FORK
LOWER YELLOWSTONE
SO. DAKOTA
JEFFERSON
MADISON
WYOMING
IDAHO
N
0 25 50 75 100 STATUTE MILES
0 50 100 150 KILOMETERS
Albers Equal Area Projection
Approx Scale: 1:4,300,000
SOURCE
Information provided by NRCS Snow Survey Personnel
CURRENT AS OF JANUARY 1, 1996
Note:
Data used to generate this map are PROVISIONAL and SUBJECT TO CHANGE.
SNOW WATER EQUIVALENT
MUCH ABOVE AVERAGE (over 130%)
ABOVE AVERAGE (110–130%)
NEAR AVERAGE (90–110%)
BELOW AVERAGE (70–90%)
MUCH BELOW AVERAGE (below 70%)
NO MOUNTAIN SURVEY
NRCS Office Locations
NRCS STATE OFFICE, BOZEMAN, MT. GRASS/MAPGEN 4.1
JANUARY 1996


U.S. DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
STREAM FLOW PROSPECTS FOR MONTANA
Spring and Summer Period
CANADA
ST. MARY'S
MILK
KOOTENAI
SUN, TETON, MARIAS
FLATHEAD
NORTH DAKOTA
MAIN STEM MISSOURI
LOWER CLARK FORK
IDAHO
SMITH, JUDITH, MUSSELSHELL
MAIN STEM MISSOURI
UPPER CLARK FORK
BITTERROOT
SO. DAKOTA
LOWER YELLOWSTONE
JEFFERSON
GALLATIN
UPPER YELLOWSTONE
MADISON
CAMAS
N
0 25 50 75 100 STATUTE MILES
0 50 100 150 KILOMETERS
Albers Equal Area Projection
Approx Scale: 1:4,300,000
SOURCE
Information provided by NRCS Snow Survey Personnel
CURRENT AS OF JANUARY 1, 1996
Note:
Data used to generate this map are PROVISIONAL and SUBJECT TO CHANGE. There are no areas designated as Much Above Average, Below Average, or Much Below Average in the January 1 report.
STREAM FLOW PROSPECTS
MUCH ABOVE AVERAGE (over 130%)
ABOVE AVERAGE (110–130%)
NEAR AVERAGE (90–110%)
BELOW AVERAGE (70–90%)
MUCH BELOW AVERAGE (below 70%)
NOT FORECAST
NRCS Office Locations
NRCS STATE OFFICE, BOZEMAN, MT. GRASS/MAPGEN 4.1
JANUARY 1996

# BASIN SUMMARY OF SNOW COURSE DATA

JANUARY 1996

| SNOW COURSE | ELEVATION | DATE | SNOW DEPTH | WATER CONTENT | LAST YEAR | AVERAGE 1961-90 |
|---|---|---|---|---|---|---|
| MONTANA | | | | | | |
| ASHLEY LAKE | 4000 | 12/30/95 | 7 | 1.8 | 2.4 | 2.4 |
| ASHLEY DIVIDE | 4820 | 12/30/95 | 8 | 2.0 | 3.0 | 3.4 |
| BADGER PASS PILLOW | 6900 | 1/01/96 | --- | 17.3 | 20.7 | 14.2 |
| BANFIELD MTN PILLOW | 5600 | 1/01/96 | --- | 7.8 | 11.9 | 9.0 |
| BARKER LAKES PILLOW | 8250 | 1/01/96 | --- | 8.2 | 8.5 | 6.8 |
| BASIN CREEK PILLOW | 7180 | 1/01/96 | --- | 3.2 | 6.4 | 3.6 |
| BEAGLE SPGS PILLOW | 8850 | 1/01/96 | --- | 4.3 | 4.0 | 3.7 |
| BEAVER CREEK PILLOW | 7850 | 1/01/96 | --- | 9.3 | 8.7 | 7.9 |
| BISSON CREEK PILLOW | 4920 | 1/01/96 | --- | 2.5 | 4.9 | 3.9 |
| BISSON CREEK | 4920 | 12/27/95 | 5 | 1.2 | 5.0 | 4.1 |
| BLACK BEAR PILLOW | 7950 | 1/01/96 | --- | 20.8 | 26.8 | 15.6 |
| BLACK PINE PILLOW | 7100 | 1/01/96 | --- | 7.8 | 4.7 | 4.9 |
| BLACKTAIL | 5650 | 12/28/95 | 16 | 4.4 | 6.4 | 5.8 |
| BLOODY DICK PILLOW | 7550 | 1/01/96 | --- | 8.4 | 6.5 | 5.1 |
| BOULDER MTN PILLOW | 7950 | 1/01/96 | --- | 9.6 | 11.8 | 8.4 |
| BOX CANYON PILLOW | 6700 | 1/01/96 | --- | 5.1 | 3.6 | 4.8 |
| BOXELDER CREEK | 5100 | 12/26/95 | 6 | .5 | 2.1 | 4.3 |
| BRIDGER BOWL PILLOW | 7250 | 12/28/95 | --- | 10.2 | 11.5 | 10.5 |
| BRIDGER BOWL | 7250 | 12/28/95 | 32 | 10.6 | 13.6 | 10.6 |
| CALVERT CR PILLOW | 6430 | 1/01/96 | --- | 4.8 | 3.1 | 4.1 |
| CARROT BASIN PILLOW | 9000 | 1/01/96 | --- | 16.7 | 16.4 | 11.9 |
| CHESSMAN RESERVOIR | 6200 | 12/27/95 | 0 | .0 | 1.4 | 1.5 |
| CLOVER MDW PILLOW | 8800 | 1/01/96 | --- | 10.4 | 10.0 | 7.9 |
| COLE CREEK PILLOW | 7850 | 1/01/96 | --- | 10.9 | 8.4 | 7.7 |
| COMBINATION PILLOW | 5600 | 1/01/96 | --- | 1.1 | 1.2 | 2.3 |
| COPPER BOTTOM PILLOW | 5200 | 1/01/96 | --- | 4.7 | 4.2 | 4.7 |
| COPPER CAMP PILLOW | 6950 | 1/01/96 | --- | 17.9 | 13.4 | 13.6 |
| CRYSTAL LAKE PILLOW | 6050 | 1/01/96 | --- | 2.3 | 5.7 | 5.3 |
| DALY CREEK PILLOW | 5780 | 1/01/96 | --- | 5.8 | 3.2 | 5.3 |
| DARKHORSE LK. PILLOW | 8700 | 1/01/96 | --- | 20.4 | 16.4 | 15.5 |
| DEADMAN CR PILLOW | 6450 | 1/01/96 | --- | 3.7 | 3.4 | 4.4 |
| DESERT MOUNTAIN | 5600 | 12/30/95 | 19 | 4.2 | 6.2 | 6.7 |
| DISCOVERY BASIN | 7050 | 12/29/95 | 24 | 6.2 | 5.0 | 4.4 |
| DIVIDE PILLOW | 7800 | 1/01/96 | --- | 4.7 | 6.5 | 4.8 |
| DIX HILL | 6400 | 12/30/95 | 13 | 3.2 | 4.5 | 5.0 |
| DUPUYER CREEK PILLOW | 5750 | 1/01/96 | --- | 3.0 | 5.6 | 4.8 |
| EMERY CREEK PILLOW | 4350 | 1/01/96 | --- | 4.6 | 7.2 | 7.2 |
| FISHER CREEK PILLOW | 9100 | 1/01/96 | --- | 24.6 | 17.5 | 15.6 |
| FLATTOP MTN PILLOW | 6300 | 1/01/96 | --- | 26.5 | 23.8 | 21.0 |
| FROHNER MDWS PILLOW | 6480 | 1/01/96 | --- | 3.0 | 3.1 | 3.4 |
| GRAVE CRK PILLOW | 4300 | 1/01/96 | --- | 5.1 | 9.0 | 7.7 |
| HAND CREEK PILLOW | 5030 | 1/01/96 | --- | 4.1 | 7.0 | 5.5 |
| HAWKINS LAKE PILLOW | 6450 | 1/01/96 | --- | 13.7 | 13.4 | 13.0 |
| HEBGEN DAM | 6550 | 12/29/95 | 14 | 2.8 | 6.4 | 4.9 |
| HELL ROARING DIVIDE | 5770 | 12/29/95 | 45 | 14.8 | 16.4 | 13.0 |
| HOLBROOK | 4530 | 1/01/96 | --- | 2.4e | 4.8 | 4.0 |
| HOODOO BASIN PILLOW | 6050 | 1/01/96 | --- | 18.5 | 21.4 | 19.0 |
| KIWANIS CAMP | 3720 | 12/26/95 | 4 | .8 | .0 | 1.1 |
| KRAFT CREEK PILLOW | 4750 | 1/01/96 | --- | 3.9 | 6.1 | 6.6 |
| LAKEVIEW RDG. PILLOW | 7400 | 1/01/96 | --- | 4.9 | 6.2 | 5.4 |

| SNOW COURSE | ELEVATION | DATE | SNOW DEPTH | WATER CONTENT | LAST YEAR | AVERAGE 1961-90 |
|---|---|---|---|---|---|---|
| LEMHI RIDGE PILLOW | 8100 | 1/01/96 | --- | 6.1 | 6.7 | 4.4 |
| LICK CREEK PILLOW | 6860 | 1/01/96 | --- | 3.9 | 5.9 | 5.6 |
| LOWER TWIN PILLOW | 7900 | 1/01/96 | --- | 10.8 | 9.2 | 9.5 |
| LUBRECHT PILLOW | 4680 | 1/01/96 | --- | 1.5 | 2.1 | 2.4 |
| LUBRECHT FOREST NO 3 | 5450 | 12/31/95 | 9 | 1.6 | 2.4 | 2.6 |
| LUBRECHT FOREST NO 4 | 4650 | 12/31/95 | 3 | .6 | 1.0 | 1.4 |
| LUBRECHT FOREST NO 6 | 4040 | 12/31/95 | 2 | .6 | .9 | 1.6 |
| LUBRECHT HYDROPLOT | 4200 | 12/31/95 | 8 | 1.8 | 2.0 | 2.8 |
| MADISON PLT PILLOW | 7750 | 1/01/96 | --- | 12.5 | 17.0 | 10.1 |
| MANY GLACIER PILLOW | 4900 | 1/01/96 | --- | 4.4 | 7.2 | 7.3 |
| MARIAS PASS | 5250 | 12/28/95 | 19 | 5.8 | 8.7 | 6.7 |
| MAYNARD CR PILLOW | 6210 | 12/28/95 | --- | 2.2 | 4.5 | 4.6 |
| MAYNARD CREEK | 6210 | 12/28/95 | 7 | 2.3 | 5.8 | 5.8 |
| MONUMENT PK PILLOW | 8850 | 1/01/96 | --- | 13.0 | 9.0 | 9.5 |
| MOSS PEAK PILLOW | 6780 | 1/01/96 | --- | 18.6 | 25.4 | 16.1 |
| MT LOCKHART PILLOW | 6400 | 1/01/96 | --- | 10.8 | 10.7 | 8.8 |
| MULE CREEK PILLOW | 8300 | 1/01/96 | --- | 11.0 | 8.1 | 6.8 |
| NEVADA CREEK PILLOW | 6480 | 1/01/96 | --- | 5.4 | 5.4 | 5.7 |
| NEZ PERCE CMP PILLOW | 5650 | 1/01/96 | --- | 6.9 | 6.3 | 5.7 |
| NOISY BASIN PILLOW | 6040 | 1/01/96 | --- | 18.4 | 22.2 | 17.2 |
| N.F. ELK CR PILLOW | 6250 | 1/01/96 | --- | 5.3 | 4.8 | 4.6 |
| NF JOCKO PILLOW | 6330 | 1/01/96 | --- | 20.3 | 17.7 | 17.9 |
| NORTH FORK JOCKO | 6330 | 12/28/95 | 53 | 18.8 | 18.8 | 18.4 |
| N.E. ENTRANCE PILLOW | 7350 | 1/01/96 | --- | 5.0 | 3.8 | 4.0 |
| NORTHEAST ENTRANCE | 7350 | 12/28/95 | 18 | 4.8 | 4.0 | 3.7 |
| OPHIR PARK | 7150 | 12/30/95 | 25 | 6.9 | 5.4 | 7.0 |
| PETERSON MDW PILLOW | 7200 | 12/29/95 | --- | 4.7 | 5.2 | 4.2 |
| PETERSON MEADOWS | 7200 | 12/29/95 | 17 | 3.7 | 5.3 | 4.2 |
| PICKFOOT CRK PILLOW | 6650 | 1/01/96 | --- | 4.5 | 3.3 | 4.9 |
| PIKE CREEK PILLOW | 5930 | 1/01/96 | --- | 12.7 | 13.8 | 11.4 |
| PIPESTONE PASS | 7200 | 12/29/95 | 3 | .8 | 4.6 | 2.1 |
| PLACER BASIN PILLOW | 8830 | 1/01/96 | --- | 10.5 | 8.3 | 9.4 |
| PORCUPINE PILLOW | 6500 | 1/01/96 | --- | 1.4 | 3.3 | 3.2 |
| REVAIS CREEK | 4800 | 12/28/95 | 0 | .0 | .0 | 1.6 |
| ROCKER PEAK PILLOW | 8000 | 1/01/96 | --- | 8.1 | 7.6 | 6.4 |
| ROCKY BOY PILLOW | 4700 | 12/26/95 | --- | 1.4 | 1.2 | 2.2 |
| ROCKY BOY | 4700 | 12/26/95 | 3 | .6 | .4 | 1.8 |
| SACAJAWEA | 6550 | 12/28/95 | 14 | 3.6 | 6.1 | -- |
| SADDLE MTN PILLOW | 7900 | 1/01/96 | --- | 18.2 | 12.6 | 11.1 |
| SHORT CREEK PILLOW | 7000 | 1/01/96 | --- | 2.2 | 3.2 | 2.5 |
| SHOWER FALLS PILLOW | 8100 | 1/01/96 | --- | 12.7 | 10.1 | 10.4 |
| SILVER RUN PILLOW | 6630 | 1/01/96 | --- | 3.2 | 2.2 | 2.0 |
| SKALKAHO PILLOW | 7260 | 1/01/96 | --- | 15.4 | 10.2 | 9.8 |
| S.F. SHIELDS PILLOW | 8100 | 1/01/96 | --- | 8.8 | 7.9 | 7.5 |
| SPOTTED BEAR MTN. | 7000 | 1/01/96 | --- | 7.5e | 6.5 | 6.6 |
| SPUR PARK PILLOW | 8100 | 1/01/96 | --- | 11.5 | 8.4 | 9.8 |
| SQUAW PEAK | 6150 | 12/28/95 | 16 | 4.9 | 7.2 | 6.0 |
| STAHL PEAK PILLOW | 6030 | 1/01/96 | --- | 22.4 | 21.1 | 16.0 |
| STEMPLE PASS | 6600 | 12/28/95 | 12 | 2.1 | -- | -- |
| STORM LAKE | 7780 | 12/29/95 | 28 | 6.8 | 7.0 | 5.4 |
| STUART MOUNTAIN | 7400 | 1/01/96 | --- | 17.1E | 13.6 | 13.4 |
| SUCKER CREEK | 3960 | 12/26/95 | 1 | .1 | .0 | .6 |
| TAYLOR ROAD | 4080 | 12/26/95 | 4 | .7 | .0 | 2.0 |
| TEN MILE LOWER | 6600 | 12/27/95 | 6 | 1.1 | 4.1 | 3.0 |
| TEN MILE MIDDLE | 6800 | 1/01/96 | --- | 2.3E | 6.8 | 4.7 |
| TEPEE CREEK PILLOW | 8000 | 1/01/96 | --- | 6.9 | 7.8 | 5.7 |
| TIZER BASIN PILLOW | 6840 | 1/01/96 | --- | 5.2 | 5.8 | 4.8 |

| SNOW COURSE | ELEVATION | DATE | SNOW DEPTH | WATER CONTENT | LAST YEAR | AVERAGE 1961-90 |
|---|---|---|---|---|---|---|
| TRINKUS LAKE | 6100 | 1/01/96 | --- | 20.6e | 21.9 | 18.7 |
| TRUMAN CREEK | 4060 | 12/29/95 | 5 | 1.3 | 2.5 | 2.0 |
| TV MOUNTAIN | 6800 | 1/01/96 | --- | 8.6E | 7.6 | 7.2 |
| TWELVEMILE PILLOW | 5600 | 1/01/96 | --- | 3.8 | 7.2 | 7.2 |
| TWENTY-ONE MILE | 7150 | 12/27/95 | 24 | 5.9 | 10.8 | 7.3 |
| UPPER HOLLAND LAKE | 6200 | 1/01/96 | --- | 18.1e | 14.3 | 15.8 |
| WALDRON PILLOW | 5600 | 1/01/96 | --- | 5.4 | 5.2 | 5.0 |
| WARM SPRINGS PILLOW | 7800 | 1/01/96 | --- | 16.9 | 9.3 | 9.4 |
| WEASEL DIVIDE | 5450 | 12/29/95 | 50 | 16.2 | 18.6 | 15.3 |
| WEST YELL'ST PILLOW | 6700 | 1/03/96 | --- | 1.6 | 6.3 | 4.0 |
| WEST YELLOWSTONE | 6700 | 1/03/96 | 15 | 2.9 | 9.4 | 4.8 |
| WHISKEY CREEK PILLOW | 6800 | 1/01/96 | --- | 6.2 | 12.3 | 7.0 |
| WHITE MILL PILLOW | 8700 | 1/01/96 | --- | 18.8 | 11.5 | 11.4 |
| WOOD CREEK PILLOW | 5960 | 1/01/96 | --- | 4.1 | 3.4 | 4.4 |

MONTANA Water Supply Outlook Report as of January 1, 1996

This report does not contain all the data that is normally available to water users due to the Government shutdown during December and the first week of January. Several valley precipitation and reservoir values were not available to be included in this report.

Water year 1996 has gotten off to a real on-again off-again start. There initially was good fall rain, then it seemed as though we could not get a storm to move into Montana. Even into the first part of January, storms would produce snow one day then warm up and rain in the valleys and low mountain areas.

SNOWPACK

As of January 1, mountain snow water contents averaged slightly above average and about the same as last year. However, there is a large mix of snowpack depending on elevation. At low elevations snowpacks are well below average, mid elevations are below average, and high elevations are above to well above average. The Bitterroot, Beaverhead, Beartooth and Bighorn Mountains are well above average.

West of the Continental Divide, snowpacks were 6 percent above average and 6 percent below last year. East of the Continental Divide, snowpacks were 22 percent above average and 3 percent above last year.

| RIVER BASIN | % OF AVERAGE | % OF LAST YEAR |
|---|---|---|
| COLUMBIA | 106 | 94 |
| KOOTENAI | 98 | 74 |
| FLATHEAD | 104 | 90 |
| UPPER CLARK FORK | 114 | 109 |
| BITTERROOT | 122 | 118 |
| LOWER CLARK FORK | 90 | 85 |
| MISSOURI | 109 | 86 |
| MISSOURI HEADWATERS | 114 | 87 |
| JEFFERSON | 122 | 98 |
| MADISON | 120 | 84 |
| GALLATIN | 110 | 93 |
| MISSOURI MAINSTEM | 92 | 85 |
| HEADWATERS MAINSTEM | 92 | 75 |
| SMITH-JUDITH-MUSSELSHELL | 92 | 92 |
| SUN-TETON-MARIAS | 107 | 87 |
| MAINSTEM ABOVE FT. PECK RES | 97 | 85 |
| MILK | 28 | 108 |
| ST. MARY | 109 | 100 |
| YELLOWSTONE | 133 | 120 |
| UPPER YELLOWSTONE | 139 | 128 |
| LOWER YELLOWSTONE (WYOMING) | 132 | 118 |
| WIND | 135 | 128 |
| SHOSHONE | 176 | 151 |
| BIGHORN | 138 | 122 |
| TONGUE | 115 | 116 |
| POWDER | 101 | 77 |

## PRECIPITATION

December precipitation across the state was 5 percent below average and 17 percent above last year, while water year precipitation was 51 percent above average and 26 percent above last year.

West of the Continental Divide, December precipitation was 1 percent below average and 30 percent above last year and the water year precipitation was 60 percent above average and 30 percent above last year. East of the Divide, December precipitation was 6 percent below average and 13 percent above last year and the water year precipitation was 40 percent above average and 15 percent above last year.

| RIVER BASIN | DECEMBER % OF AVERAGE | WATER YEAR % OF AVERAGE |
|---|---|---|
| COLUMBIA | 99 | 160 |
| KOOTENAI | 116 | 167 |
| FLATHEAD | 94 | 159 |
| UPPER CLARK FORK | 89 | 146 |
| BITTERROOT | 103 | 177 |
| LOWER CLARK FORK | 102 | 141 |
| MISSOURI | 90 | 131 |
| JEFFERSON | 92 | 129 |
| MADISON | 99 | 123 |
| GALLATIN | 83 | 132 |
| MISSOURI MAINSTEM | 81 | 109 |
| SMITH-JUDITH-MUSSELSHELL | 74 | 110 |
| SUN-TETON-MARIAS | 96 | 146 |
| MILK | 101 | 165 |
| ST. MARY | 102 | 175 |
| YELLOWSTONE | 90 | 132 |
| UPPER YELLOWSTONE | 103 | 144 |
| LOWER YELLOWSTONE (WYOMING) | 81 | 125 |
| WIND | 96 | 125 |
| SHOSHONE | 110 | 170 |
| BIGHORN | 50 | 102 |
| TONGUE | 57 | 114 |
| POWDER | 66 | 99 |

## RESERVOIRS

Major reporting reservoir storages statewide were 27 percent above average and 74 percent above last year.

Reservoir storage west of the Continental Divide was 19 percent above average and 60 percent above last year. East of the Continental Divide, reservoir storages were 25 percent above average and 28 percent above last year.

RESERVOIRS (continued)

| RIVER BASIN | % OF AVERAGE | % OF LAST YEAR |
|---|---|---|
| COLUMBIA | 119 | 160 |
| KOOTENAI | 135 | 111 |
| FLATHEAD | 127 | 174 |
| UPPER CLARK FORK | 124 | 129 |
| BITTERROOT | 111 | 287 |
| LOWER CLARK FORK | 100 | 99 |
| MISSOURI | 132 | 130 |
| JEFFERSON | 117 | 170 |
| MADISON | 104 | 102 |
| GALLATIN | 179 | 124 |
| MISSOURI MAINSTEM | 106 | 116 |
| SMITH-JUDITH-MUSSELSHELL | 141 | 145 |
| SUN-TETON-MARIAS | 145 | 129 |
| MILK | 125 | 148 |
| ST. MARY | 142 | 195 |
| YELLOWSTONE | 100 | 104 |
| UPPER YELLOWSTONE | 99 | 98 |
| LOWER YELLOWSTONE | 102 | 111 |

STREAMFLOW

Streamflow forecasts across Montana are 4 percent above average and 8 percent above last years forecasts.

West of the Continental Divide, streamflows are forecast to be 1 percent above average and 28 percent above last years forecasts. East of the Continental Divide, streamflows are forecast to be 1 percent above average and 1 percent above last years forecasts.

| RIVER BASIN | FORECASTS % OF AVERAGE | FORECASTS % OF LAST YEAR |
|---|---|---|
| COLUMBIA | 113 | 128 |
| KOOTENAI | 118 | 124 |
| FLATHEAD | 112 | 123 |
| UPPER CLARK FORK | 101 | 123 |
| BITTERROOT | 113 | 128 |
| LOWER CLARK FORK | 113 | 131 |
| MISSOURI | 100 | 98 |
| JEFFERSON | 103 | 92 |
| MADISON | 108 | 87 |
| GALLATIN | 96 | 86 |
| MISSOURI MAINSTEM | 89 | 83 |
| SMITH-JUDITH-MUSSELSHELL | 103 | 116 |
| SUN-TETON-MARIAS | 109 | 103 |
| MILK | 92 | 109 |
| ST. MARY | 93 | 98 |
| YELLOWSTONE | 109 | 106 |
| UPPER YELLOWSTONE | 116 | 112 |
| LOWER YELLOWSTONE | 102 | 99 |

NOTE: The FORECAST AS % OF LAST YEAR column above, is this years forecast as a percent of last years forecast, not of what actually occurred.

KOOTENAI RIVER BASIN in Montana as of January 1, 1996

Snowpack conditions in the Kootenai River Basin were near average. Snow water content was 2 percent below average and 26 percent below last year.

Mountain precipitation during December was 13 percent above average and 35 percent above last year. Valley precipitation during December was 23 percent above average and 123 percent above last year. Water year precipitation, beginning October 1, 1995, was 67 percent above average and 39 percent above last year.

Lake Koocanusa storage on the last day of December was 35 percent above average and 11 percent above last year.

Streamflows are forecast to be 18 percent above average and 24 percent above last year.

Streamflow Forecasts

| | <=== Drier === | | Future Conditions | | === Wetter ===> | | |
|---|---|---|---|---|---|---|---|
| Forecast Pt | ========== Chance of Exceeding * ========== | | | | | | |
| Forecast Period | 90% (1000AF) | 70% (1000AF) | 50% (Most Prob) (1000AF) | (% AVG.) | 30% (1000AF) | 10% (1000AF) | 30 Yr Avg (1000AF) |
| TOBACCO RIVER nr Eureka | | | | | | | |
| APR-JUL | 101 | 124 | 140 | 105 | 156 | 179 | 133 |
| APR-SEP | 109 | 136 | 155 | 105 | 174 | 200 | 147 |
| LIBBY RES Inflow (1,2) | | | | | | | |
| APR-JUL | 5010 | 6310 | 6900 | 119 | 7490 | 8790 | 5779 |
| APR-SEP | 5870 | 7400 | 8090 | 119 | 8780 | 10300 | 6772 |
| FISHER RIVER near Libby | | | | | | | |
| APR-JUL | 149 | 188 | 215 | 92 | 240 | 280 | 234 |
| APR-SEP | 158 | 198 | 225 | 90 | 250 | 295 | 250 |
| YAAK RIVER near Troy | | | | | | | |
| APR-JUL | 360 | 430 | 475 | 98 | 520 | 590 | 483 |
| APR-SEP | 385 | 455 | 500 | 99 | 545 | 615 | 505 |
| KOOTENAI at Leonia (1,2) | | | | | | | |
| APR-JUL | 6230 | 7860 | 8600 | 119 | 9340 | 11000 | 7199 |
| APR-SEP | 7160 | 9030 | 9880 | 119 | 10700 | 12600 | 8275 |

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

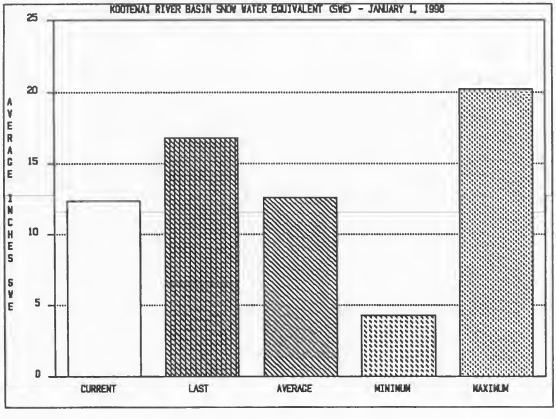
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural flow - actual flow may be affected by upstream water management.

Reservoir Storage (1000AF) End of December

| Reservoir | Usable Capacity | ********** Usable Storage ********* This Year | Last Year | Average |
|---|---|---|---|---|
| LAKE KOOCANUSA | 5748.0 | 4113.0 | 3705.0 | 3050.0 |

Watershed Snowpack Analysis

| Watershed | Number of Data Sites | This Year as Percent of Last Year | Average |
|---|---|---|---|
| KOOTENAI MAINSTEM | 2 | 52 | 82 |
| TOBACCO | 3 | 90 | 112 |
| FISHER | 1 | 59 | 75 |
| YAAK | 1 | 102 | 105 |
| KOOTENAI ab BONNERS FERRY | 15 | 94 | 112 |
| KOOTENAI in MONTANA | 7 | 74 | 98 |




AVERAGE IS FOR THE PERIOD 1961-1990.

MINIMUM SNOW WATER EQUIVALENT, 1969-1995, OCCURRED IN WATER YEAR 1977.

MAXIMUM SNOW WATER EQUIVALENT, 1969-1995, OCCURRED IN WATER YEAR 1985.

FLATHEAD RIVER BASIN as of January 1, 1996

Snowpack conditions in the Flathead River Basin were near average. Snow water content was 4 percent above average and 10 percent below last year.

Mountain precipitation during December was 7 percent below average and 6 percent above last year. Valley precipitation during December was 8 percent above average and 106 percent above last year. Water year precipitation, beginning October 1, 1995, was 63 percent above average and 41 percent above last year.

Reservoir storage on the last day of December was 27 percent above average and 74 percent above last year. Combined Camas reservoir storage was 11 percent below average and 83 percent above last year; combined Mission Valley reservoir storage was 15 percent above average and 62 percent above last year; Hungry Horse storage was 25 percent above average and 88 percent above last year; and Flathead Lake storage was 32 percent above average and 51 percent above last year.

Streamflows are forecast to be 12 percent above average and 23 percent above last year.

Streamflow Forecasts

| | <--- Drier --- | Future Conditions | --- Wetter ---> | | | |
|---|---|---|---|---|---|---|
| Forecast Pt | | Chance of Exceeding * | | | | |
| Forecast Period | 90% (1000AF) | 70% (1000AF) | 50% (Most Prob) (1000AF) | (% AVG.) | 30% (1000AF) | 10% (1000AF) | 30 Yr Avg (1000AF) |
| NF FLATHEAD nr Columbia Falls | | | | | | | |
| APR-JUL | 1580 | 1760 | 1880 | 113 | 2000 | 2180 | 1662 |
| APR-SEP | 1760 | 1950 | 2080 | 113 | 2210 | 2400 | 1836 |
| MF FLATHEAD nr West Glacier | | | | | | | |
| APR-JUL | 1470 | 1680 | 1820 | 111 | 1960 | 2170 | 1638 |
| APR-SEP | 1630 | 1840 | 1990 | 111 | 2140 | 2350 | 1788 |
| SF FLATHEAD nr Columbia Falls (1,2) | | | | | | | |
| APR-JUL | 1730 | 2140 | 2330 | 114 | 2520 | 2930 | 2051 |
| APR-SEP | 1880 | 2290 | 2480 | 114 | 2670 | 3080 | 2184 |
| FLATHEAD at Columbia Falls (2) | | | | | | | |
| APR-JUL | 4960 | 5610 | 6060 | 111 | 6510 | 7160 | 5482 |
| APR-SEP | 5440 | 6110 | 6560 | 110 | 7010 | 7680 | 5960 |
| STILLWATER nr Whitefish | | | | | | | |
| APR-JUL | 132 | 173 | 200 | 106 | 225 | 270 | 189 |
| APR-SEP | 146 | 190 | 220 | 105 | 250 | 295 | 209 |
| WHITEFISH nr Kalispell | | | | | | | |
| APR-JUL | 83 | 98 | 108 | 104 | 118 | 134 | 104 |
| APR-SEP | 93 | 110 | 122 | 105 | 134 | 151 | 116 |
| SWAN RIVER near Bigfork | | | | | | | |
| APR-JUL | 445 | 520 | 570 | 98 | 620 | 695 | 583 |
| APR-SEP | 515 | 595 | 650 | 98 | 705 | 785 | 665 |

Streamflow Forecasts (continued)

| Forecast Pt Forecast Period | <=== Drier === 90% (1000AF) | 70% (1000AF) | Future Conditions Chance of Exceeding * 50% (Most Prob) (1000AF) (% AVG.) | === Wetter ===> 30% (1000AF) | 10% (1000AF) | 30 Yr Avg (1000AF) |
|---|---|---|---|---|---|---|
| FLATHEAD Lake Inflow (1,2) | | | | | | |
| APR-JUL | 5440 | 6560 | 7070 111 | 7580 | 8700 | 6390 |
| APR-SEP | 6000 | 7140 | 7660 111 | 8180 | 9320 | 6926 |

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

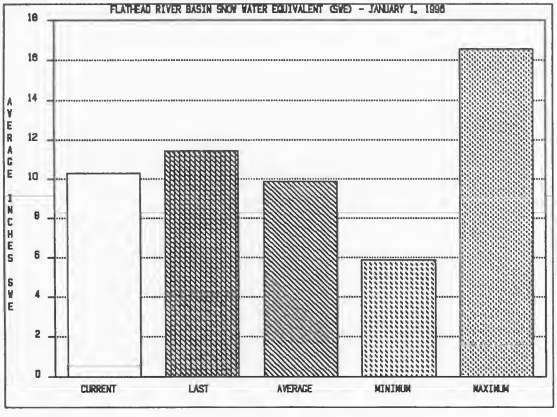
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural flow - actual flow may be affected by upstream water management.

Reservoir Storage (1000AF) End of December

| Reservoir | Usable Capacity | ********** Usable Storage ********* This Year | Last Year | Average |
|---|---|---|---|---|
| CAMAS (4) | 45.2 | 16.5 | 9.0 | 18.6 |
| MISSION VALLEY (8) | 100.0 | 38.8 | 24.0 | 33.8 |
| HUNGRY HORSE | 3451.0 | 3231.0 | 1716.0 | 2586.0 |
| FLATHEAD LAKE | 1791.0 | 1724.0 | 1138.0 | 1305.0 |

Watershed Snowpack Analysis

| Watershed | Number of Data Sites | This Year as Percent of Last Year | Average |
|---|---|---|---|
| NORTH FORK in CANADA | 1 | 99 | 92 |
| NORTH FORK in MONTANA | 6 | 93 | 111 |
| MIDDLE FORK | 6 | 88 | 106 |
| SOUTH FORK | 6 | 93 | 103 |
| STILLWATER-WHITEFISH | 4 | 79 | 93 |
| SWAN | 6 | 93 | 108 |
| MISSION VALLEY | 3 | 69 | 99 |
| LITTLE BITTERROOT-ASHLEY | 4 | 66 | 70 |
| JOCKO | 5 | 113 | 112 |
| FLATHEAD in MONTANA | 29 | 89 | 104 |
| FLATHEAD RIVER BASIN | 30 | 90 | 103 |




AVERAGE IS FOR THE PERIOD 1961-1990.

MINIMUM SNOW WATER EQUIVALENT, 1961-1995, OCCURRED IN WATER YEAR 1977.

MAXIMUM SNOW WATER EQUIVALENT, 1961-1995, OCCURRED IN WATER YEAR 1991.

UPPER CLARK FORK RIVER BASIN as of January 1, 1996

Snowpack conditions in the Upper Clark Fork River Basin were above average. Snow water content was 14 percent above average and 9 percent above last year.

Mountain precipitation during December was 13 percent below average and 32 percent above last year. Valley precipitation during December was 17 percent above average and 116 percent above last year. Water year precipitation, beginning October 1, 1995, was 56 percent above average and 44 percent above last year.
Reservoir storage on the last day of December was 24 percent above average and 29 percent above last year. Georgetown Lake storage was 4 percent above average and 5 percent above last year; Lower Willow Creek storage was 171 percent above average and 171 percent above last year; and Nevada Creek storage was 115 percent above average and 180 percent above last year.

Streamflows are forecast to be 5 percent above average and 28 percent above last year.

Streamflow Forecasts

| | <=== Drier === | Future Conditions | === Wetter ===> | | |
|---|---|---|---|---|---|
| Forecast Pt | ========== Chance of Exceeding * ========== | | | | |
| Forecast Period | 90% (1000AF) | 70% (1000AF) | 50% (Most Prob) (1000AF) | (% AVG.) | 30% (1000AF) | 10% (1000AF) | 30 Yr Avg (1000AF) |
| MOULTON RES Inflow (million gal.) | | | | | | | |
| APR-JUN | 118 | 179 | 220 | 104 | 260 | 325 | 212 |
| APR-JUL | 127 | 197 | 244 | 104 | 290 | 360 | 234 |
| WARM SPRINGS CK at Anaconda (2) | | | | | | | |
| APR-JUL | 23 | 32 | 37 | 97 | 43 | 51 | 38 |
| APR-SEP | 30 | 39 | 45 | 96 | 51 | 60 | 47 |
| LITTLE BLACKFOOT nr Garrison | | | | | | | |
| APR-JUL | 19.0 | 55 | 80 | 96 | 105 | 141 | 83 |
| APR-SEP | 23 | 62 | 88 | 99 | 114 | 153 | 89 |
| FLINT CK nr Southern Cross (2) | | | | | | | |
| APR-JUL | 9.1 | 13.2 | 16.0 | 113 | 18.8 | 23 | 14.2 |
| APR-SEP | 10.4 | 15.5 | 19.0 | 114 | 23 | 28 | 16.7 |
| FLINT CK bl Boulder Ck | | | | | | | |
| APR-JUL | 31 | 46 | 57 | 100 | 68 | 83 | 57 |
| APR-SEP | 41 | 60 | 73 | 100 | 86 | 105 | 73 |
| LOWER WILLOW CK RES Inflow | | | | | | | |
| APR-JUL | 6.9 | 11.7 | 15.0 | 107 | 18.3 | 23 | 14.0 |
| APR-SEP | 7.7 | 12.6 | 16.0 | 108 | 19.4 | 24 | 14.8 |
| MF ROCK CREEK nr Philipsburg | | | | | | | |
| APR-JUL | 63 | 76 | 85 | 129 | 94 | 107 | 66 |
| APR-SEP | 76 | 90 | 100 | 135 | 110 | 124 | 74 |
| ROCK CREEK near Clinton | | | | | | | |
| APR-JUL | 245 | 320 | 375 | 127 | 430 | 505 | 296 |
| APR-SEP | 275 | 360 | 420 | 126 | 480 | 565 | 333 |

Streamflow Forecasts (continued)

| Forecast Pt / Forecast Period | <=== Drier === Future Conditions === Wetter ===> Chance of Exceeding * 90% (1000AF) | 70% (1000AF) | 50% (Most Prob) (1000AF) | (% AVG.) | 30% (1000AF) | 10% (1000AF) | 30 Yr Avg (1000AF) |
|---|---|---|---|---|---|---|---|
| NEVADA CK nr Finn | | | | | | | |
| APR-JUL | 11.2 | 16.0 | 19.2 | 101 | 22 | 27 | 19.1 |
| APR-SEP | 13.0 | 18.0 | 21 | 100 | 24 | 29 | 21 |
| CLEARWATER nr Clearwater | | | | | | | |
| APR-JUL | 125 | 153 | 172 | 100 | 191 | 220 | 172 |
| APR-SEP | 132 | 161 | 181 | 100 | 200 | 230 | 181 |
| BLACKFOOT RIVER near Bonner | | | | | | | |
| APR-JUL | 585 | 735 | 840 | 101 | 945 | 1100 | 835 |
| APR-SEP | 655 | 820 | 930 | 100 | 1040 | 1200 | 926 |
| CLARK FORK ab Milltown | | | | | | | |
| APR-JUL | 310 | 500 | 630 | 97 | 760 | 950 | 652 |
| APR-SEP | 380 | 590 | 730 | 97 | 870 | 1080 | 755 |
| CLARK FORK ab Missoula | | | | | | | |
| APR-JUL | 1060 | 1380 | 1590 | 107 | 1800 | 2120 | 1487 |
| APR-SEP | 1220 | 1570 | 1800 | 107 | 2030 | 2380 | 1681 |

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

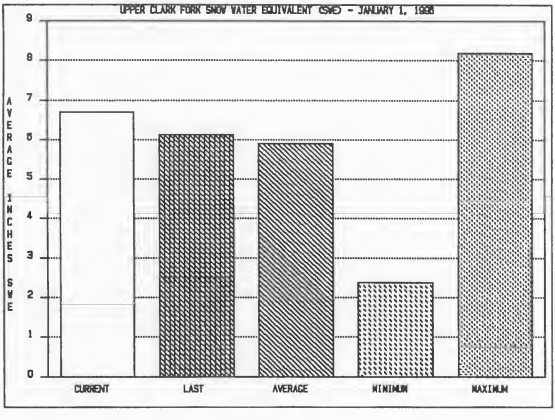
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural flow - actual flow may be affected by upstream water management.

Reservoir Storage (1000AF) End of December

| Reservoir | Usable Capacity | ********** Usable Storage ********* This Year | Last Year | Average |
|---|---|---|---|---|
| GEORGETOWN LAKE | 31.0 | 28.9 | 27.5 | 27.9 |
| LOWER WILLOW CREEK | 4.9 | 3.8 | 1.4 | 1.4 |
| NEVADA CREEK | 12.6 | 8.4 | 3.0 | 3.9 |

Watershed Snowpack Analysis

| Watershed | Number of Data Sites | This Year as Percent of Last Year | Average |
|---|---|---|---|
| CLARK FORK ab FLINT CREEK | 9 | 95 | 107 |
| FLINT CREEK | 5 | 110 | 120 |
| ROCK CREEK | 3 | 115 | 134 |
| CLARK FORK ab BLACKFOOT | 14 | 105 | 116 |
| BLACKFOOT | 13 | 112 | 105 |
| UPPER CLARK FORK BASIN | 25 | 109 | 114 |




AVERAGE IS FOR THE PERIOD 1961-1990.

MINIMUM SNOW WATER EQUIVALENT, 1961-1995, OCCURRED IN WATER YEAR 1977.

MAXIMUM SNOW WATER EQUIVALENT, 1961-1995, OCCURRED IN WATER YEAR 1978.

BITTERROOT RIVER BASIN as of January 1, 1996

Snowpack conditions in the Bitterroot River Basin were above average. Snow water content was 22 percent above average and 18 percent above last year.

Mountain precipitation during December was 1 percent below average and 49 percent above last year. Valley precipitation during December was 45 percent above average and 143 percent above last year. Water year precipitation, beginning October 1, 1995, was 77 percent above average and 55 percent above last year.

Reservoir storage on the last day of December was 11 percent above average and 187 percent above last year. Painted Rocks Lake storage was 63 percent below average and 155 percent above last year and Como storage was 127 percent above average and 196 percent above last year.

Streamflows are forecast to be 13 percent above average and 28 percent above last year.

Streamflow Forecasts

| | <--- Drier --- | Future Conditions | --- Wetter ---> | | | |
|---|---|---|---|---|---|---|
| Forecast Pt | Chance of Exceeding * | | | | | |
| Forecast Period | 90% (1000AF) | 70% (1000AF) | 50% (Most Prob) (1000AF) | (% AVG.) | 30% (1000AF) | 10% (1000AF) | 30 Yr Avg (1000AF) |
| WF BITTERROOT nr Conner (2) | | | | | | | |
| APR-JUL | 110 | 149 | 175 | 115 | 200 | 240 | 152 |
| APR-SEP | 110 | 152 | 180 | 108 | 210 | 250 | 166 |
| BITTERROOT nr Darby | | | | | | | |
| APR-JUL | 355 | 465 | 540 | 110 | 615 | 725 | 491 |
| APR-SEP | 400 | 515 | 590 | 109 | 665 | 780 | 540 |
| ROCK CK nr Darby (2) | | | | | | | |
| APR-JUL | 56 | 69 | 78 | 99 | 87 | 100 | 79 |
| APR-SEP | 60 | 73 | 82 | 99 | 91 | 104 | 83 |
| SKALKAHO CK nr Hamilton | | | | | | | |
| APR-JUL | 36 | 44 | 50 | 109 | 56 | 64 | 46 |
| APR-SEP | 42 | 52 | 58 | 109 | 64 | 74 | 53 |
| BURNT FORK CK nr Stevensville (2) | | | | | | | |
| APR-JUL | 20 | 26 | 31 | 107 | 36 | 42 | 29 |
| APR-SEP | 24 | 31 | 36 | 106 | 41 | 49 | 34 |
| BITTERROOT at Missoula | | | | | | | |
| APR-JUL | 1060 | 1320 | 1500 | 115 | 1680 | 1940 | 1301 |
| APR-SEP | 1100 | 1350 | 1525 | 108 | 1700 | 1950 | 1418 |

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

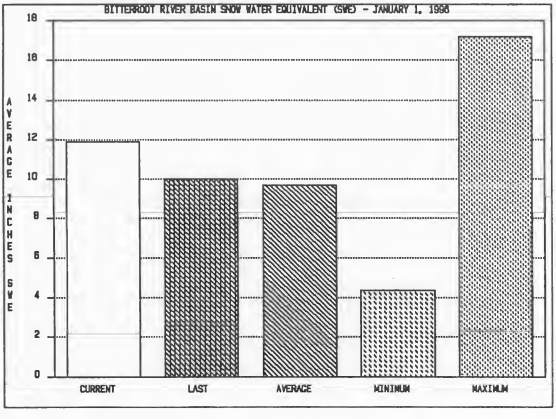
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural flow - actual flow may be affected by upstream water management.

Reservoir Storage (1000AF) End of December

| Reservoir | Usable Capacity | ********** Usable Storage ********* This Year | Last Year | Average |
|---|---|---|---|---|
| PAINTED ROCKS LAKE | 31.7 | 5.1 | 2.0 | 13.9 |
| COMO | 34.9 | 20.4 | 6.9 | 9.0 |

Watershed Snowpack Analysis

| Watershed | Number of Data Sites | This Year as Percent of Last Year | Average |
|---|---|---|---|
| WEST FORK BITTERROOT | 2 | 133 | 149 |
| EAST SIDE BITTERROOT | 3 | 152 | 150 |
| WEST SIDE BITTERROOT | 3 | 97 | 102 |
| BITTERROOT RIVER BASIN | 7 | 118 | 123 |




AVERAGE IS FOR THE PERIOD 1961-1990.

MINIMUM SNOW WATER EQUIVALENT, 1961-1995, OCCURRED IN WATER YEAR 1977.

MAXIMUM SNOW WATER EQUIVALENT, 1961-1995, OCCURRED IN WATER YEAR 1978.

LOWER CLARK FORK RIVER BASIN as of January 1, 1996

Snowpack conditions in the Lower Clark Fork River Basin were average. Snow water content was 10 percent below average and 15 percent below last year.

Mountain precipitation during December was 3 percent below average and 31 percent above last year. Valley precipitation during December was 20 percent above average and 75 percent above last year. Water year precipitation, beginning October 1, 1995, was 63 percent above average and 41 percent above last year.

Noxon Rapids storage on the last day of December was 100 percent of average and 1 percent below last year.

Streamflows are forecast to be 13 percent above average and 31 percent above last year.

Streamflow Forecasts

| Forecast Pt | <=== Drier === Future Conditions === Wetter ===> | | | | | | |
|---|---|---|---|---|---|---|---|
| | Chance of Exceeding * | | | | | | |
| Forecast Period | 90% (1000AF) | 70% (1000AF) | 50% (Most Prob) (1000AF) | (% AVG.) | 30% (1000AF) | 10% (1000AF) | 30 Yr Avg (1000AF) |
| CLARK FORK ab Missoula | | | | | | | |
| APR-JUL | 1060 | 1380 | 1590 | 107 | 1800 | 2120 | 1487 |
| APR-SEP | 1220 | 1570 | 1800 | 107 | 2030 | 2380 | 1681 |
| CLARK FORK bl Missoula | | | | | | | |
| APR-JUL | 2240 | 2800 | 3180 | 114 | 3560 | 4120 | 2788 |
| APR-SEP | 2570 | 3150 | 3540 | 114 | 3930 | 4510 | 3099 |
| CLARK FORK at St. Regis (1) | | | | | | | |
| APR-JUL | 2490 | 3760 | 4340 | 118 | 4920 | 6190 | 3686 |
| APR-SEP | 2770 | 4180 | 4820 | 118 | 5460 | 6870 | 4095 |
| CLARK FORK nr Plains (1,2) | | | | | | | |
| APR-JUL | 7330 | 10300 | 11700 | 112 | 13100 | 16100 | 10450 |
| APR-SEP | 7990 | 11300 | 12800 | 112 | 14300 | 17600 | 11470 |
| THOMPSON RIVER nr Thompson Falls | | | | | | | |
| APR-JUL | 150 | 205 | 240 | 112 | 275 | 330 | 214 |
| APR-SEP | 170 | 225 | 265 | 110 | 305 | 360 | 240 |
| PROSPECT CREEK at Thompson Falls | | | | | | | |
| APR-JUL | 86 | 115 | 135 | 110 | 155 | 184 | 123 |
| APR-SEP | 95 | 125 | 145 | 110 | 165 | 196 | 132 |

Streamflow Forecasts (continued)

| Forecast Pt | <=== Drier === Future Conditions === Wetter ===> | | | | | | |
|---|---|---|---|---|---|---|---|
| | Chance of Exceeding * | | | | | | |
| Forecast Period | 90% (1000AF) | 70% (1000AF) | 50% (Most Prob) (1000AF) | (% AVG.) | 30% (1000AF) | 10% (1000AF) | 30 Yr Avg (1000AF) |
| CLARK FK at Whitehorse Rpds (1,2) | | | | | | | |
| APR-JUL | 8070 | 11500 | 13000 | 111 | 14500 | 17900 | 11730 |
| APR-SEP | 8870 | 12600 | 14300 | 111 | 16000 | 19700 | 12910 |

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

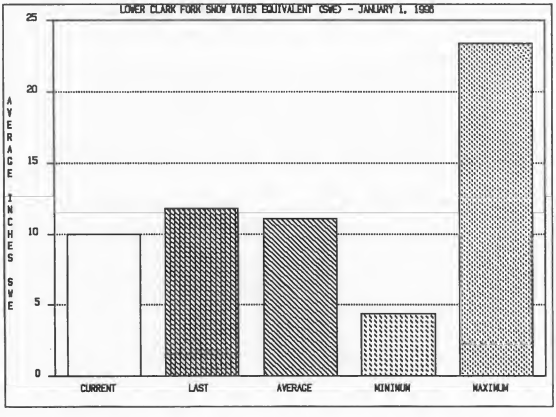
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural flow - actual flow may be affected by upstream water management.

Reservoir Storage (1000AF) End of December

| Reservoir | Usable Capacity | ********** Usable Storage ********* This Year | Last Year | Average |
|---|---|---|---|---|
| NOXON RAPIDS | 335.0 | 318.0 | 321.2 | 317.1 |

Watershed Snowpack Analysis

| Watershed | Number of Data Sites | This Year as Percent of Last Year | Average |
|---|---|---|---|
| LOWER CLARK FORK | 7 | 85 | 90 |




AVERAGE IS FOR THE PERIOD 1961-1990.

MINIMUM SNOW WATER EQUIVALENT, 1961-1995, OCCURRED IN WATER YEAR 1977.

MAXIMUM SNOW WATER EQUIVALENT, 1961-1995, OCCURRED IN WATER YEAR 1985.

JEFFERSON RIVER BASIN as of January 1, 1996

Snowpack conditions in the Jefferson River Basin were above average. Snow water content was 22 percent above average and 2 percent below last year.

Mountain precipitation during December was 8 percent below average and 3 percent above last year. Valley precipitation during December was 9 percent below average and 10 percent below last year. Water year precipitation, beginning October 1, 1995, was 29 percent above average and 3 percent below last year.

Reservoir storage on the last day of December was 17 percent above average and 70 percent above last year. Lima storage was 32 percent above average and 261 percent above last year; Clark Canyon storage was 13 percent above average and 48 percent above last year; and Ruby River storage was 23 percent above average and 75 percent above last year.

Streamflows are forecast to be 3 percent above average and 8 percent below last year.

Streamflow Forecasts

| Forecast Pt / Forecast Period | <--- Drier --- Future Conditions --- Wetter ---> Chance of Exceeding * 90% (1000AF) | 70% (1000AF) | 50% (Most Prob) (1000AF) | 50% (Most Prob) (% AVG.) | 30% (1000AF) | 10% (1000AF) | 30 Yr Avg (1000AF) |
|---|---|---|---|---|---|---|---|
| RED ROCK RIVER near Monida (2) | | | | | | | |
| APR-JUL | 63 | 82 | 95 | 98 | 108 | 128 | 97 |
| APR-SEP | 61 | 84 | 100 | 95 | 116 | 139 | 105 |
| BEAVERHEAD RIVER near Grant (2) | | | | | | | |
| APR-JUL | 113 | 144 | 165 | 125 | 186 | 215 | 132 |
| APR-SEP | 137 | 175 | 200 | 129 | 225 | 265 | 155 |
| BEAVERHEAD RIVER at Barretts (2) | | | | | | | |
| APR-JUL | 146 | 178 | 200 | 116 | 220 | 255 | 172 |
| APR-SEP | 186 | 220 | 245 | 121 | 270 | 305 | 203 |
| RUBY RIVER near Alder | | | | | | | |
| APR-JUL | 48 | 67 | 80 | 96 | 93 | 112 | 83 |
| APR-SEP | 61 | 82 | 97 | 98 | 112 | 134 | 99 |
| BIG HOLE RIVER near Melrose | | | | | | | |
| APR-JUL | 385 | 530 | 630 | 98 | 730 | 3850 | 641 |
| APR-SEP | 430 | 585 | 690 | 99 | 795 | 950 | 697 |
| BOULDER RIVER near Boulder | | | | | | | |
| APR-JUL | 40 | 63 | 79 | 93 | 95 | 118 | 85 |
| APR-SEP | 43 | 68 | 85 | 93 | 102 | 127 | 91 |
| WILLOW CREEK near Harrison | | | | | | | |
| APR-JUL | 4.1 | 11.3 | 16.2 | 92 | 21 | 28 | 17.7 |
| APR-SEP | 4.1 | 12.5 | 18.2 | 91 | 24 | 32 | 20 |

Streamflow Forecasts (continued)

| Forecast Pt Forecast Period | <=== Drier === 90% (1000AF) | 70% (1000AF) | Future Conditions Chance of Exceeding * 50% (Most Prob) (1000AF) | (% AVG.) | === Wetter ===> 30% (1000AF) | 10% (1000AF) | 30 Yr Avg (1000AF) |
|---|---|---|---|---|---|---|---|
| JEFFERSON RIVER near Three Forks (2) | | | | | | | |
| APR-JUL | 555 | 790 | 950 | 103 | 1110 | 1350 | 920 |
| APR-SEP | 625 | 880 | 1050 | 104 | 1220 | 1470 | 1012 |

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

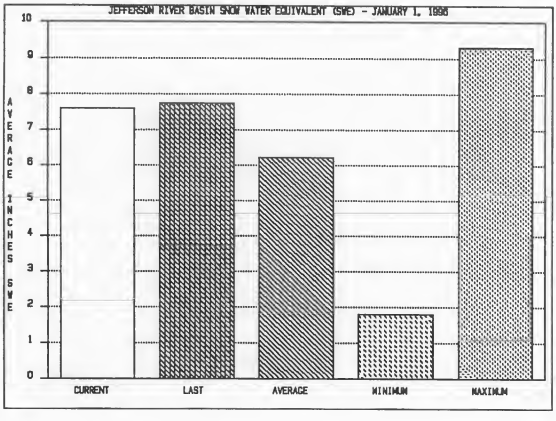
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural flow - actual flow may be affected by upstream water management.

Reservoir Storage (1000AF) End of December

| Reservoir | Usable Capacity | ********** Usable Storage ********* This Year | Last Year | Average |
|---|---|---|---|---|
| LIMA | 84.0 | 42.9 | 11.9 | 32.4 |
| CLARK CANYON | 255.6 | 160.3 | 108.3 | 142.1 |
| RUBY RIVER | 38.8 | 24.8 | 14.2 | 20.2 |

Watershed Snowpack Analysis

| Watershed | Number of Data Sites | This Year as Percent of Last Year | Average |
|---|---|---|---|
| BEAVERHEAD | 8 | 97 | 125 |
| RUBY | 4 | 97 | 114 |
| BIGHOLE | 9 | 120 | 140 |
| BOULDER | 5 | 61 | 86 |
| JEFFERSON RIVER BASIN | 21 | 98 | 122 |




AVERAGE IS FOR THE PERIOD 1961-1990.

MINIMUM SNOW WATER EQUIVALENT, 1961-1995, OCCURRED IN WATER YEAR 1977.

MAXIMUM SNOW WATER EQUIVALENT, 1961-1995, OCCURRED IN WATER YEAR 1965.

MADISON RIVER BASIN as of January 1, 1996

Snowpack conditions in the Madison River Basin were well above average. Snow water content was 20 percent above average and 16 percent below last year.

Mountain precipitation during December was 100 percent of average and 33 percent below last year. Valley precipitation during December was 10 percent below average and 57 percent below last year. Water year precipitation, beginning October 1, 1995, was 23 percent above average and 16 percent below last year.

Reservoir storage on the last day of December was 3 percent above average and 1 percent below last year. Ennis Lake storage was 7 percent below average and 2 percent above last year and Hebgen Lake storage was 4 percent above average and 2 percent below last year.

Streamflows are forecast to be 8 percent above average and 13 percent below last year.

Streamflow Forecasts

| | <=== Drier === | Future Conditions | === Wetter ===> | | |
|---|---|---|---|---|---|
| Forecast Pt | Chance of Exceeding * | | | | |
| Forecast Period | 90% (1000AF) | 70% (1000AF) | 50% (Most Prob) (1000AF) (% AVG.) | 30% (1000AF) | 10% (1000AF) | 30 Yr Avg (1000AF) |
| MADISON RIVER near Grayling (2) | | | | | | |
| APR-JUL | 315 | 360 | 390 103 | 420 | 465 | 380 |
| APR-SEP | 410 | 465 | 500 103 | 535 | 590 | 486 |
| MADISON RIVER near McAllister (2) | | | | | | |
| APR-JUL | 610 | 690 | 740 112 | 790 | 870 | 662 |
| APR-SEP | 790 | 875 | 930 112 | 985 | 1070 | 831 |

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

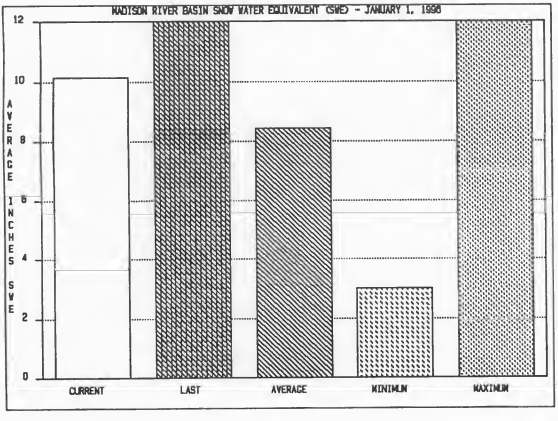
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural flow - actual flow may be affected by upstream water management.

Reservoir Storage (1000AF) End of December

| Reservoir | Usable Capacity | ********** Usable Storage ********** This Year | Last Year | ********* Average |
|---|---|---|---|---|
| ENNIS LAKE | 41.0 | 31.4 | 30.7 | 33.7 |
| HEBGEN LAKE | 377.5 | 256.8 | 261.4 | 246.8 |

Watershed Snowpack Analysis

| Watershed | Number of Data Sites | This Year as Percent of Last Year | Average |
|---|---|---|---|
| MADISON above HEBGEN LAKE | 4 | 65 | 113 |
| MADISON below HEBGEN LAKE | 7 | 104 | 125 |
| MADISON RIVER BASIN | 11 | 84 | 120 |




AVERAGE IS FOR THE PERIOD 1961-1990.

MINIMUM SNOW WATER EQUIVALENT, 1961-1995, OCCURRED IN WATER YEAR 1977.

MAXIMUM SNOW WATER EQUIVALENT, 1961-1995, OCCURRED IN WATER YEAR 1995.

GALLATIN RIVER BASIN as of January 1, 1996

Snowpack conditions in the Gallatin River Basin were slightly above average. Snow water content was 10 percent above average and 7 percent below last year.

Mountain precipitation during December was 17 percent below average and 2 percent below last year. Valley precipitation during December was 23 percent below average and 34 percent below last year. Water year precipitation, beginning October 1, 1995, was 32 percent above average and 11 percent above last year.

Middle Creek storage on the last day of December was 79 percent above average and 24 percent above last year.

Streamflows are forecast to be 4 below average and 14 percent below last year.

Streamflow Forecasts

| Forecast Pt / Period | <--- Drier --- Future Conditions --- Wetter ---> Chance of Exceeding * 90% (1000AF) | 70% (1000AF) | 50% (Most Prob) (1000AF) | (% AVG.) | 30% (1000AF) | 10% (1000AF) | 30 Yr Avg (1000AF) |
|---|---|---|---|---|---|---|---|
| GALLATIN RIVER near Gateway | | | | | | | |
| APR-JUL | 335 | 390 | 430 | 98 | 470 | 525 | 441 |
| APR-SEP | 400 | 460 | 505 | 97 | 550 | 610 | 518 |
| E & W FK HYALITE CREEK near Bozeman | | | | | | | |
| APR-JUL | 15.0 | 19.0 | 21 | 91 | 23 | 27 | 23 |
| APR-SEP | 18.0 | 22 | 24 | 92 | 27 | 30 | 26 |
| HYALITE CREEK near Bozeman (2) | | | | | | | |
| APR-JUL | 23 | 29 | 33 | 92 | 37 | 44 | 36 |
| APR-SEP | 27 | 33 | 38 | 90 | 43 | 49 | 42 |
| GALLATIN RIVER at Logan (2) | | | | | | | |
| APR-JUL | 305 | 405 | 475 | 95 | 545 | 645 | 498 |
| APR-SEP | 375 | 480 | 550 | 95 | 620 | 725 | 581 |

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

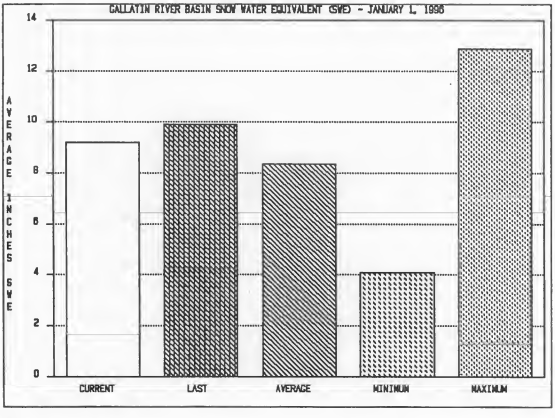
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural flow - actual flow may be affected by upstream water management.

Reservoir Storage (1000AF) End of December

| Reservoir | Usable Capacity | ********** Usable Storage ********* This Year | Last Year | Average |
|---|---|---|---|---|
| MIDDLE CREEK | 10.2 | 6.1 | 4.9 | 3.4 |

Watershed Snowpack Analysis

| Watershed | Number of Data Sites | This Year as Percent of Last Year | Average |
|---|---|---|---|
| UPPER GALLATIN | 4 | 101 | 128 |
| HYALITE | 2 | 104 | 104 |
| BRIDGER | 2 | 66 | 79 |
| GALLATIN RIVER BASIN | 8 | 93 | 110 |




AVERAGE IS FOR THE PERIOD 1961-1990.

MINIMUM SNOW WATER EQUIVALENT, 1961-1995, OCCURRED IN WATER YEAR 1966.

MAXIMUM SNOW WATER EQUIVALENT, 1961-1995, OCCURRED IN WATER YEAR 1968.

MISSOURI MAINSTEM RIVER BASIN as of January 1, 1996

Snowpack conditions in the Missouri Mainstem River Basin were slightly below average. Snow water content was 8 percent below average and 15 percent below last year.

Mountain precipitation during December was 13 percent below average and 57 percent above last year. Valley precipitation during December was 37 percent below average and 19 percent above last year. Water year precipitation, beginning October 1, 1995, was 9 percent above average and 6 percent below last year.

Reservoir storage on the last day of December was 6 percent above average and 16 percent above last year. Canyon Ferry Lake storage was 6 percent above average and 31 percent above last year; Lake Helena storage was 5 percent above average and the same as last year; Hauser & Helena storage was 2 percent above average and the same as last year; Holter Lake storage was 6 percent above average and the same as last year; and Fort Peck Lake storage was 5 percent above average and 7 percent above last year.

Streamflows are forecast to be 11 percent below average and 17 percent below last year.

Streamflow Forecasts

| Forecast Pt / Forecast Period | <--- Drier --- Future Conditions --- Wetter ---> Chance of Exceeding * 90% (1000AF) | 70% (1000AF) | 50% (Most Prob) (1000AF) | (% AVG.) | 30% (1000AF) | 10% (1000AF) | 30 Yr Avg (1000AF) |
|---|---|---|---|---|---|---|---|
| MISSOURI RIVER at Toston (2) | | | | | | | |
| APR-JUL | 1320 | 1780 | 2100 | 101 | 2420 | 2880 | 2075 |
| APR-SEP | 1630 | 2120 | 2450 | 101 | 2780 | 3270 | 2416 |
| PRICKLY PEAR CREEK near Clancy | | | | | | | |
| APR-JUL | 4.0 | 15.0 | 22 | 96 | 30 | 41 | 23 |
| APR-SEP | 5.0 | 18.0 | 26 | 96 | 34 | 47 | 27 |
| SUN RIVER at Gibson Dam (2) | | | | | | | |
| APR-JUL | 320 | 430 | 505 | 106 | 580 | 690 | 478 |
| APR-SEP | 360 | 475 | 555 | 106 | 635 | 750 | 526 |
| MISSOURI RIVER at Fort Benton (2) | | | | | | | |
| APR-JUL | 1670 | 2430 | 2950 | 96 | 3470 | 4230 | 3087 |
| APR-SEP | 2140 | 2950 | 3500 | 95 | 4050 | 4860 | 3678 |
| MARIAS RIVER near Shelby (2) | | | | | | | |
| APR-JUL | 230 | 390 | 495 | 111 | 600 | 760 | 447 |
| APR-SEP | 275 | 430 | 540 | 111 | 650 | 805 | 487 |
| MISSOURI RIVER at Virgelle (2) | | | | | | | |
| APR-JUL | 1490 | 2540 | 3250 | 90 | 3960 | 5010 | 3595 |
| APR-SEP | 1960 | 2990 | 3700 | 88 | 4410 | 5440 | 4217 |

Streamflow Forecasts (continued)

| Forecast Pt Forecast Period | <=== Drier === 90% (1000AF) | 70% (1000AF) | Future Conditions 50% (Most Prob) (1000AF) | (% AVG.) | === Wetter ==> 30% (1000AF) | 10% (1000AF) | 30 Yr Avg (1000AF) |
|---|---|---|---|---|---|---|---|
| | Chance of Exceeding * | | | | | | |
| MISSOURI RIVER near Landusky (2) | | | | | | | |
| APR-JUL | 1920 | 2740 | 3300 | 85 | 3860 | 4680 | 3897 |
| APR-SEP | 1850 | 2920 | 3650 | 80 | 4380 | 5450 | 4580 |
| MISSOURI RIVER below Fort Peck (2) | | | | | | | |
| APR-JUL | 1470 | 2560 | 3300 | 82 | 4040 | 5130 | 4015 |
| APR-SEP | 1170 | 2560 | 3500 | 78 | 4440 | 5830 | 4467 |
| LAKE SAKAKAWEA Inflow (2) | | | | | | | |
| APR-JUL | 5520 | 7450 | 8750 | 88 | 10100 | 12000 | 9897 |
| APR-SEP | 5770 | 8110 | 9700 | 85 | 11300 | 13600 | 11346 |

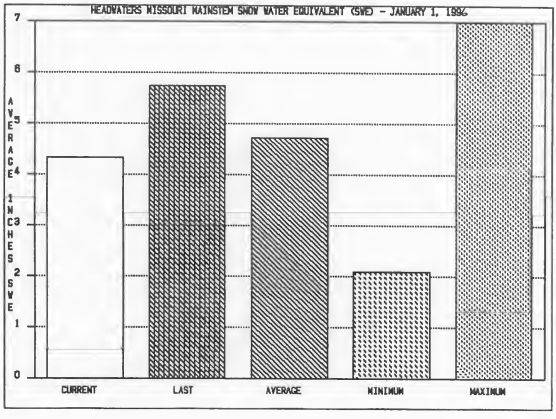
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural flow - actual flow may be affected by upstream water management.

Watershed Snowpack Analysis

| Watershed | Number of Data Sites | This Year as Percent of Last Year | Average |
|---|---|---|---|
| HEADWATERS MAINSTEM | 8 | 75 | 92 |
| SUN-TETON-MARIAS BASINS | 7 | 87 | 107 |
| SMITH-JUDITH-MUSSELSHELL | 6 | 92 | 92 |
| MAINSTEM ab FORT PECK RES | 20 | 85 | 97 |
| MILK | 5 | 108 | 28 |
| MISSOURI MAINSTEM BASIN | 25 | 85 | 92 |




AVERAGE IS FOR THE PERIOD 1961-1990.

MINIMUM SNOW WATER EQUIVALENT, 1961-1995, OCCURRED IN WATER YEAR 1966.

MAXIMUM SNOW WATER EQUIVALENT, 1961-1995, OCCURRED IN WATER YEAR 1978.

SMITH-JUDITH-MUSSELSHELL RIVER BASINS as of January 1, 1996

Snowpack conditions in the Smith-Judith-Musselshell River Basins were slightly below average. Snow water content was 8 percent below average and 8 percent below last year.

Mountain and valley precipitation during December was 26 percent below average and 12 percent above last year. Water year precipitation, beginning October 1, 1995, was 10 percent above average and 1 percent below last year.

Reservoir storage on the last day of December was 41 percent above average and 45 percent above last year. Smith River storage was 12 percent above average and 65 percent above last year; Bair storage was 38 percent above average and 82 percent above last year; Martinsdale storage was 50 percent above average and 221 percent above last year; and Deadman's Basin was 44 percent above average and 25 percent above last year.

Streamflows are forecast to be 3 percent above average and 16 percent above last year.

Streamflow Forecasts

| | <=== Drier === | Future | Conditions | --- Wetter ===> | | |
|---|---|---|---|---|---|---|
| Forecast Pt | ========== Chance of Exceeding * ========== | | | | | |
| Forecast Period | 90% (1000AF) | 70% (1000AF) | 50% (Most Prob) (1000AF) | (% AVG.) | 30% (1000AF) | 10% (1000AF) | 30 Yr Avg (1000AF) |
| SMITH RIVER near Fort Logan | | | | | | | |
| APR-JUL | 38 | 53 | 64 | 103 | 75 | 91 | 62 |
| APR-SEP | 47 | 64 | 75 | 103 | 87 | 104 | 73 |
| SHEEP CREEK nr White Sulphur Springs | | | | | | | |
| APR-JUL | 13.1 | 16.1 | 18.1 | 100 | 20 | 23 | 18.1 |
| APR-SEP | 16.0 | 19.0 | 21 | 100 | 23 | 26 | 21 |
| NF MUSSELSHELL near Delpine | | | | | | | |
| APR-JUL | 1.4 | 3.1 | 4.3 | 90 | 5.5 | 7.2 | 4.8 |
| APR-SEP | 1.8 | 3.7 | 5.0 | 89 | 6.3 | 8.2 | 5.6 |
| SF MUSSELSHELL abv Martinsdale | | | | | | | |
| APR-JUL | 18.0 | 40 | 55 | 106 | 70 | 92 | 52 |
| APR-SEP | 22 | 45 | 60 | 107 | 75 | 98 | 56 |

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

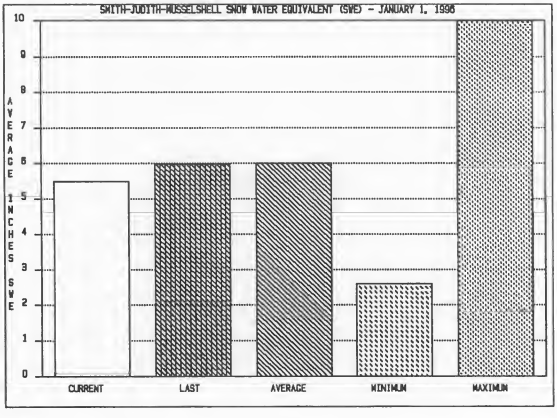
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural flow - actual flow may be affected by upstream water management.

Reservoir Storage (1000AF) End of December

| Reservoir | Usable Capacity | ********** Usable Storage ********* This Year | Last Year | Average |
|---|---|---|---|---|
| SMITH RIVER | 10.6 | 6.6 | 4.0 | 5.9 |
| NEWLAN CREEK | | NO REPORT | | |
| BAIR | 7.0 | 5.1 | 2.8 | 3.7 |
| MARTINSDALE | 23.1 | 13.8 | 4.3 | 9.2 |
| DEADMAN'S BASIN | 72.2 | 58.1 | 46.5 | 40.3 |

Watershed Snowpack Analysis

| Watershed | Number of Data Sites | This Year as Percent of Last Year | Average |
|---|---|---|---|
| SMITH | 4 | 109 | 107 |
| JUDITH | 3 | 100 | 90 |
| MUSSELSHELL | 1 | 42 | 44 |
| SMITH-JUDITH-MUSSELSHELL | 6 | 92 | 92 |




AVERAGE IS FOR THE PERIOD 1961-1990.

MINIMUM SNOW WATER EQUIVALENT, 1961-1995, OCCURRED IN WATER YEAR 1988.

MAXIMUM SNOW WATER EQUIVALENT, 1961-1995, OCCURRED IN WATER YEAR 1978.

SUN-TETON-MARIAS RIVER BASINS as of January 1, 1996

Snowpack conditions in the Sun-Teton-Marias River Basins were slightly above average. Snow water content was 7 percent above average and 13 percent below last year.

Mountain and valley precipitation during December was 4 percent below average and 42 percent above last year. Water year precipitation, beginning October 1, 1995, was 46 percent above average and 10 percent above last year.

Reservoir storage on the last day of December was 45 percent above average and 29 percent above last year. Gibson storage was 26 percent above average and 242 percent above last year; Pishkun storage was 16 percent above average and 0 percent of last year; Willow Creek storage was 23 percent above average and 41 percent above last year; Lower Two Medicine Lake storage was not reported; Four Horns Lake storage was not reported; Swift storage was 86 percent above average and 113 percent above last year; Lake Frances storage was 37 percent above average and 93 percent above last year; and Lake Elwell (Tiber) storage was 48 percent above average and 17 percent above last year.

Streamflows are forecast to be 9 percent above average and 3 percent above last year.

Streamflow Forecasts

| | <=== Drier === | Future Conditions | === Wetter ===> | | | |
|---|---|---|---|---|---|---|
| Forecast Pt | ========== | Chance of Exceeding * | ========== | | | |
| Forecast Period | 90% (1000AF) | 70% (1000AF) | 50% (Most Prob) (1000AF) | (% AVG.) | 30% (1000AF) | 10% (1000AF) | 30 Yr Avg (1000AF) |
| SUN RIVER at Gibson Dam (2) | | | | | | | |
| APR-JUL | 320 | 430 | 505 | 106 | 580 | 690 | 478 |
| APR-SEP | 360 | 475 | 555 | 106 | 635 | 750 | 526 |
| TWO MEDICINE RIVER near Browning (2) | | | | | | | |
| APR-JUL | 141 | 200 | 240 | 112 | 280 | 340 | 215 |
| APR-SEP | 156 | 215 | 255 | 112 | 295 | 355 | 228 |
| BADGER CREEK near Browning (2) | | | | | | | |
| APR-JUL | 69 | 97 | 115 | 111 | 133 | 161 | 104 |
| APR-SEP | 86 | 115 | 135 | 113 | 155 | 184 | 120 |
| SWIFT RESERVOIR Inflow near Dupuyer | | | | | | | |
| APR-JUL | 38 | 60 | 75 | 110 | 90 | 112 | 68 |
| APR-SEP | 49 | 72 | 87 | 109 | 103 | 125 | 80 |
| DUPUYER CREEK near Valier | | | | | | | |
| APR-JUL | -1.2 | 9.8 | 17.3 | 112 | 25 | 36 | 15.5 |
| APR-SEP | -0.2 | 11.5 | 19.4 | 111 | 27 | 39 | 17.4 |
| CUT BANK CREEK at Cut Bank | | | | | | | |
| APR-JUL | 52 | 78 | 96 | 110 | 114 | 140 | 87 |
| APR-SEP | 61 | 89 | 107 | 111 | 126 | 153 | 96 |

Streamflow Forecasts (continued)

| Forecast Pt Forecast Period | <=== Drier === 90% (1000AF) | 70% (1000AF) | Future Conditions Chance of Exceeding * 50% (Most Prob) (1000AF) (% AVG.) | === Wetter ===> 30% (1000AF) | 10% (1000AF) | 30 Yr Avg (1000AF) |
|---|---|---|---|---|---|---|
| MARIAS RIVER near Shelby (2) | | | | | | |
| APR-JUL | 230 | 390 | 495 111 | 600 | 760 | 447 |
| APR-SEP | 275 | 430 | 540 111 | 650 | 805 | 487 |

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

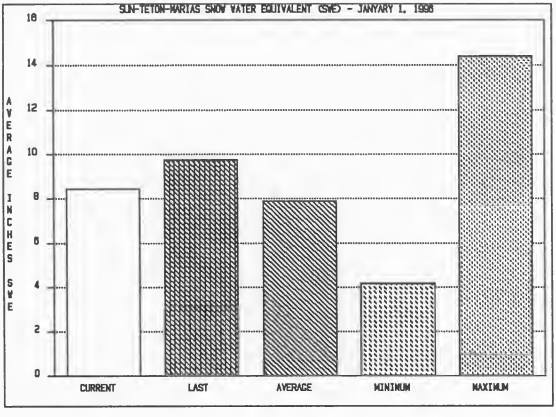
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural flow - actual flow may be affected by upstream water management.

Reservoir Storage (1000AF) End of December

| Reservoir | Usable Capacity | ********** Usable Storage ********* This Year | Last Year | Average |
|---|---|---|---|---|
| GIBSON | 99.1 | 51.6 | 15.1 | 41.0 |
| PISHKUN | 32.0 | 20.7 | 0.0 | 17.9 |
| WILLOW CREEK | 32.2 | 25.6 | 18.1 | 20.8 |
| LOWER TWO MEDICINE LAKE | | NO REPORT | | |
| FOUR HORNS LAKE | | NO REPORT | | |
| SWIFT | 30.0 | 25.6 | 12.0 | 13.8 |
| LAKE FRANCES | 112.0 | 95.3 | 49.3 | 69.6 |
| LAKE ELWELL (TIBER) | 1347.0 | 874.3 | 749.6 | 590.6 |

Watershed Snowpack Analysis

| Watershed | Number of Data Sites | This Year as Percent of Last Year | Average |
|---|---|---|---|
| SUN | 2 | 106 | 113 |
| TETON | 3 | 89 | 103 |
| MARIAS | 4 | 80 | 105 |
| SUN-TETON-MARIAS BASINS 4 | 7 | 87 | 107 |




AVERAGE IS FOR THE PERIOD 1961-1990.

MINIMUM SNOW WATER EQUIVALENT, 1961-1995, OCCURRED IN WATER YEAR 1988.

MAXIMUM SNOW WATER EQUIVALENT, 1961-1995, OCCURRED IN WATER YEAR 1991.

ST. MARY and MILK RIVER BASINS as of January 1, 1996

Snowpack conditions in the St. Mary and Milk River Basins were below average. Snow water content in the Saint Mary River Basin was 9 percent above average and the same as last year. The Milk River Basin was 72 percent below average and 8 percent above last year.

Mountain and valley precipitation in the St. Mary River Basin during December was 2 percent above average and 21 percent above last year; and in the Milk River Basin during December was 1 percent above average and 120 percent above last year. Water year precipitation, beginning October 1, 1995, was 72 percent above average and 48 percent above last year.

Reservoir storage on the last day of December was 32 percent above average and 65 percent above last year. Lake Sherburne storage was 42 percent above average and 95 percent above last year; Fresno storage was 33 percent above average and 38 percent above last year; Beaver Creek storage was 17 percent above average and 12 percent below last year; and Nelson storage was 25 percent above average and 117 percent above last year.

Streamflows in the St. Mary are forecast to be 7 percent below average and 2 percent below last year; and in the Milk are forecast to be 8 percent below average and 9 percent above last year.

Streamflow Forecasts

| | <=== Drier === | Future Conditions | === Wetter ===> | | | |
|---|---|---|---|---|---|---|
| Forecast Pt | Chance of Exceeding * | | | | | |
| Forecast Period | 90% (1000AF) | 70% (1000AF) | 50% (Most Prob) (1000AF) | (% AVG.) | 30% (1000AF) | 10% (1000AF) | 30 Yr Avg (1000AF) |
| SWIFTCURRENT CREEK at Sherburne (2) | | | | | | | |
| APR-JUL | 82 | 96 | 105 | 98 | 114 | 128 | 107 |
| APR-SEP | 98 | 112 | 122 | 98 | 132 | 146 | 125 |
| ST. MARY RIVER near Babb | | | | | | | |
| APR-JUL | 310 | 345 | 370 | 94 | 395 | 430 | 395 |
| APR-SEP | 365 | 405 | 435 | 94 | 465 | 505 | 463 |
| ST. MARY RIVER at US/CAN Border (2) | | | | | | | |
| APR-JUL | 320 | 380 | 420 | 91 | 460 | 520 | 462 |
| APR-SEP | 390 | 455 | 500 | 93 | 545 | 610 | 539 |
| MILK RIVER at Western Crossing | | | | | | | |
| MAR-JUL | 17.0 | 28 | 36 | 82 | 44 | 55 | 44 |
| MAR-SEP | 20 | 31 | 39 | 85 | 47 | 58 | 46 |
| MILK RIVER at Eastern Crossing (2) | | | | | | | |
| MAR-JUL | 21 | 55 | 77 | 96 | 100 | 133 | 80 |
| MAR-SEP | 26 | 61 | 85 | 97 | 109 | 144 | 88 |

Streamflow Forecasts (continued)

| Forecast Pt / Period | <=== Drier === 90% (1000AF) | 70% (1000AF) | Future Conditions 50% (Most Prob) (1000AF) | (% AVG.) | === Wetter ===> 30% (1000AF) | 10% (1000AF) | 30 Yr Avg (1000AF) |
|---|---|---|---|---|---|---|---|
| | Chance of Exceeding * | | | | | | |
| BEAVER CREEK near Havre | | | | | | | |
| MAR-JUL | 0.4 | 6.2 | 10.1 | 98 | 14.0 | 19.8 | 10.3 |

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

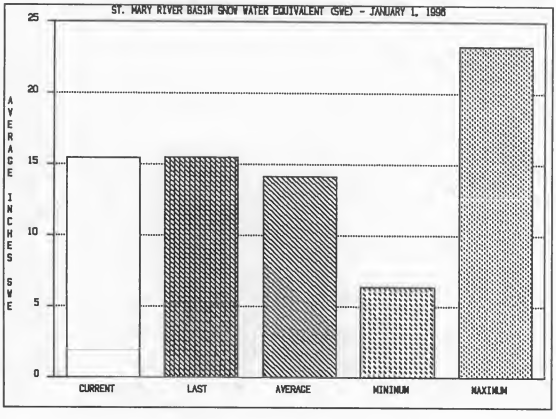
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural flow - actual flow may be affected by upstream water management.

Reservoir Storage (1000AF) End of December

| Reservoir | Usable Capacity | ********** Usable Storage ********* This Year | Last Year | Average |
|---|---|---|---|---|
| LAKE SHERBURNE | 64.3 | 30.0 | 15.4 | 21.1 |
| FRESNO | 127.0 | 70.5 | 51.1 | 53.1 |
| BEAVER CREEK | 3.5 | 2.1 | 2.4 | 1.8 |
| NELSON | 66.8 | 47.4 | 21.8 | 38.0 |

Watershed Snowpack Analysis

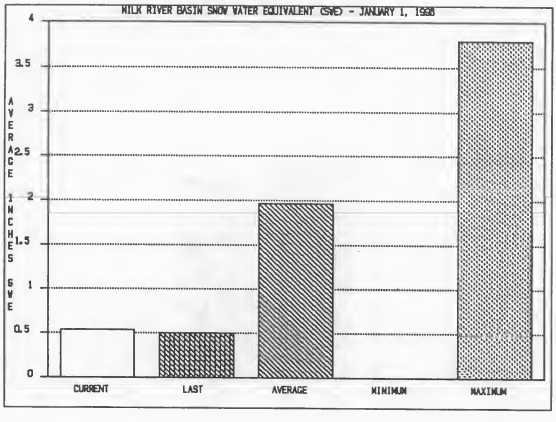
| Watershed | Number of Data Sites | This Year as Percent of Last Year | Average |
|---|---|---|---|
| ST. MARY RIVER BASIN | 2 | 100 | 109 |
| BEARPAW MOUNTAINS | 5 | 108 | 28 |
| CYPRESS HILLS, CANADA | 0 | 0 | 0 |
| MILK RIVER BASIN | 5 | 108 | 28 |
| ST. MARY and MILK BASINS | 7 | 100 | 88 |




AVERAGE IS FOR THE PERIOD 1961-1990.

MINIMUM SNOW WATER EQUIVALENT, 1961-1995, OCCURRED IN WATER YEAR 1988.

MAXIMUM SNOW WATER EQUIVALENT, 1961-1995, OCCURRED IN WATER YEAR 1991.




AVERAGE IS FOR THE PERIOD 1961-1990.

MINIMUM SNOW WATER EQUIVALENT, 1973-1995, OCCURRED IN WATER YEAR 1981.

MAXIMUM SNOW WATER EQUIVALENT, 1973-1995, OCCURRED IN WATER YEAR 1978.

UPPER YELLOWSTONE RIVER BASIN as of January 1, 1996

Snowpack conditions in the Upper Yellowstone River Basin were well above average. Snow water content was 39 percent above average and 28 percent above last year.

Mountain precipitation during December was 5 percent above average and 12 percent above last year. Valley precipitation during December was 48 percent below average and 37 percent below last year. Water year precipitation, beginning October 1, 1995, was 44 percent above average and 14 percent above last year.

Reservoir storage on the last day of December was 1 percent below average and 2 percent below last year. Mystic Lake storage was 26 percent below average and the same as last year and Cooney storage was 20 percent above average and 2 percent below last year.

Streamflows are forecast to be 16 percent above average and 12 percent above last year.

Streamflow Forecasts

| | <== Drier == | Future Conditions | == Wetter ==> | | | |
|---|---|---|---|---|---|---|
| Forecast Pt | Chance of Exceeding * | | | | | |
| Forecast Period | 90% (1000AF) | 70% (1000AF) | 50% (Most Prob) (1000AF) | (% AVG.) | 30% (1000AF) | 10% (1000AF) | 30 Yr Avg (1000AF) |
| YELLOWSTONE RIVER at Corwin Springs | | | | | | | |
| APR-JUL | 1550 | 1750 | 1880 | 117 | 2010 | 2210 | 1609 |
| APR-SEP | 1880 | 2110 | 2275 | 117 | 2440 | 2670 | 1937 |
| YELLOWSTONE RIVER near Livingston | | | | | | | |
| APR-JUL | 1780 | 2010 | 2175 | 117 | 2340 | 2570 | 1855 |
| APR-SEP | 2170 | 2450 | 2645 | 118 | 2840 | 3120 | 2241 |
| SHIELDS RIVER near Livingston | | | | | | | |
| APR-JUL | 72 | 112 | 140 | 86 | 168 | 210 | 162 |
| APR-SEP | 85 | 127 | 155 | 87 | 183 | 225 | 179 |
| BOULDER RIVER at Big Timber | | | | | | | |
| APR-JUL | 240 | 280 | 310 | 93 | 340 | 380 | 335 |
| APR-SEP | 260 | 305 | 335 | 92 | 365 | 410 | 364 |
| WEST ROSEBUD CREEK near Roscoe (2) | | | | | | | |
| APR-JUL | 63 | 72 | 77 | 126 | 83 | 91 | 61 |
| APR-SEP | 83 | 93 | 99 | 125 | 105 | 115 | 79 |
| STILLWATER RIVER nr Absarokee (2) | | | | | | | |
| APR-JUL | 435 | 535 | 600 | 120 | 665 | 765 | 498 |
| APR-SEP | 550 | 655 | 725 | 122 | 795 | 900 | 593 |
| CLARKS FORK RIVER near Belfry | | | | | | | |
| APR-JUL | 500 | 585 | 640 | 120 | 695 | 780 | 532 |
| APR-SEP | 540 | 630 | 695 | 118 | 760 | 850 | 590 |
| RED LODGE CREEK blw Cooney Res (2) | | | | | | | |
| APR-JUL | 29 | 47 | 59 | 126 | 71 | 89 | 47 |
| APR-SEP | 41 | 59 | 71 | 125 | 83 | 101 | 57 |

Streamflow Forecasts (continued)

| Forecast Pt Forecast Period | <--- Drier --- 90% (1000AF) | 70% (1000AF) | Future Conditions Chance of Exceeding * 50% (Most Prob) (1000AF) | (% AVG.) | --- Wetter ---> 30% (1000AF) | 10% (1000AF) | 30 Yr Avg (1000AF) |
|---|---|---|---|---|---|---|---|
| YELLOWSTONE RIVER at Billings (2) | | | | | | | |
| APR-JUL | 3270 | 3820 | 4185 | 117 | 4550 | 5100 | 3577 |
| APR-SEP | 3950 | 4550 | 4960 | 118 | 5370 | 5970 | 4211 |

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

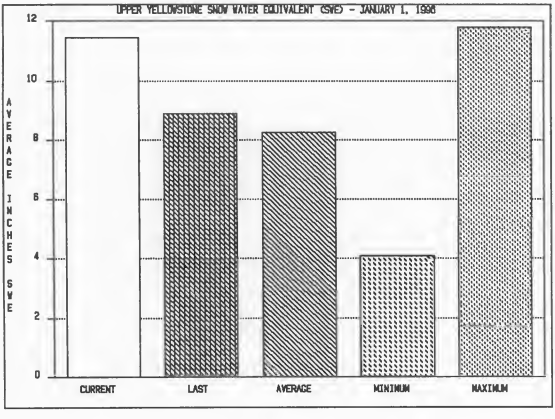
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural flow - actual flow may be affected by upstream water management.

Reservoir Storage (1000AF) End of December

| Reservoir | Usable Capacity | ********** This Year | Usable Storage Last Year | ********* Average |
|---|---|---|---|---|
| MYSTIC LAKE | 21.0 | 8.6 | 8.6 | 11.6 |
| COONEY | 27.4 | 16.8 | 17.2 | 14.0 |

Watershed Snowpack Analysis

| Watershed | Number of Data Sites | This Year as Percent of Last Year | Average |
|---|---|---|---|
| YELLOWSTONE ab LIVINGSTON | 10 | 136 | 149 |
| SHIELDS | 4 | 75 | 85 |
| BOULDER-STILLWATER | 3 | 137 | 121 |
| CLARK'S FORK-ROCK CREEK | 9 | 142 | 156 |
| UPPER YELLOWSTONE BASIN | 22 | 128 | 139 |




AVERAGE IS FOR THE PERIOD 1961-1990.

MINIMUM SNOW WATER EQUIVALENT, 1961-1995, OCCURRED IN WATER YEAR 1977.

MAXIMUM SNOW WATER EQUIVALENT, 1961-1995, OCCURRED IN WATER YEAR 1976.

LOWER YELLOWSTONE RIVER BASIN as of January 1, 1996

Snowpack conditions in the Lower Yellowstone River Basin, in Wyoming, were well above average. Snow water content was 32 percent above average and 18 percent above last year.

Mountain and valley precipitation during December was 19 percent below average and 28 percent above last year. Water year precipitation, beginning October 1, 1995, was 32 percent above average and 13 percent below last year.

Reservoir storage on the last day of December was 2 percent above average and 11 percent above last year. Bighorn Lake storage was 2 percent above average and 12 percent above last year and Tongue River storage was 14 percent below average and 3 percent below last year.

Streamflows are forecast to be 2 percent above average and 1 percent below last year.

Streamflow Forecasts

| Forecast Pt | <=== Drier === | Future Conditions | === Wetter ===> | | | |
|---|---|---|---|---|---|---|
| | Chance of Exceeding * | | | | | |
| Forecast Period | 90% (1000AF) | 70% (1000AF) | 50% (Most Prob) (1000AF) | (% AVG.) | 30% (1000AF) | 10% (1000AF) | 30 Yr Avg (1000AF) |
| YELLOWSTONE RIVER at Billings (2) | | | | | | | |
| APR-JUL | 3270 | 3820 | 4185 | 117 | 4550 | 5100 | 3577 |
| APR-SEP | 3950 | 4550 | 4960 | 118 | 5370 | 5970 | 4211 |
| BIGHORN RIVER nr St. Xavier (2) | | | | | | | |
| APR-JUL | 1460 | 1740 | 1925 | 117 | 2110 | 2390 | 1645 |
| APR-SEP | 1650 | 1980 | 2200 | 123 | 2420 | 2750 | 1794 |
| LITTLE BIGHORN RIVER nr Hardin | | | | | | | |
| APR-JUL | 18.0 | 76 | 115 | 82 | 154 | 215 | 140 |
| APR-SEP | 24 | 87 | 130 | 83 | 173 | 235 | 157 |
| TONGUE RIVER stateline nr Decker (2) | | | | | | | |
| APR-JUL | 115 | 168 | 205 | 89 | 240 | 295 | 230 |
| APR-SEP | 137 | 192 | 230 | 90 | 270 | 325 | 256 |
| YELLOWSTONE RIVER at Miles City (2) | | | | | | | |
| APR-JUL | 4250 | 5160 | 5780 | 106 | 6400 | 7310 | 5431 |
| APR-SEP | 5100 | 6170 | 6900 | 110 | 7630 | 8700 | 6281 |
| POWDER RIVER at Moorhead | | | | | | | |
| MAR-JUL | 105 | 165 | 205 | 83 | 245 | 305 | 246 |
| MAR-SEP | 128 | 189 | 230 | 86 | 270 | 330 | 268 |
| POWDER RIVER near Locate | | | | | | | |
| MAR-JUL | 132 | 200 | 250 | 78 | 300 | 370 | 320 |
| MAR-SEP | 140 | 220 | 275 | 80 | 330 | 410 | 343 |

Streamflow Forecasts (continued)

| Forecast Pt Forecast Period | <--- Drier --- 90% (1000AF) | 70% (1000AF) | Future Conditions — Chance of Exceeding * — 50% (Most Prob) (1000AF) (% AVG.) | --- Wetter ---> 30% (1000AF) | 10% (1000AF) | 30 Yr Avg (1000AF) |
|---|---|---|---|---|---|---|
| YELLOWSTONE RIVER nr Sidney (2) | | | | | | |
| APR-JUL | 3710 | 4750 | 5455 92 | 6160 | 7200 | 5925 |
| APR-SEP | 4290 | 5530 | 6375 94 | 7220 | 8460 | 6814 |

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

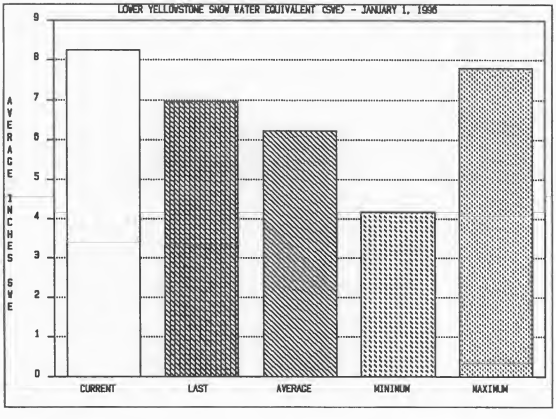
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural flow - actual flow may be affected by upstream water management.

Reservoir Storage (1000AF) End of December

| Reservoir | Usable Capacity | ********** Usable Storage ********* This Year | Last Year | Average |
|---|---|---|---|---|
| BIGHORN LAKE | 1356.0 | 912.2 | 817.4 | 891.8 |
| TONGUE RIVER | 68.0 | 22.4 | 23.1 | 26.0 |

Watershed Snowpack Analysis

| Watershed | Number of Data Sites | This Year as Percent of Last Year | Average |
|---|---|---|---|
| WIND RIVER (Wyoming) | 12 | 128 | 135 |
| SHOSHONE RIVER (Wyoming) | 5 | 151 | 176 |
| BIGHORN RIVER (Wyoming) | 15 | 122 | 138 |
| LITTLE BIGHORN (WYOMING) | 2 | 111 | 92 |
| TONGUE RIVER (Wyoming) | 5 | 116 | 115 |
| POWDER RIVER (Wyoming) | 6 | 77 | 101 |
| LOWER YELLOWSTONE BASIN | 29 | 118 | 132 |




AVERAGE IS FOR THE PERIOD 1961-1990.

MINIMUM SNOW WATER EQUIVALENT, 1979-1995, OCCURRED IN WATER YEAR 1981.

MAXIMUM SNOW WATER EQUIVALENT, 1979-1995, PREVIOUSLY OCCURRED IN WATER YEAR 1983, BUT WATER YEAR 1996 HAS NOW PASSED THE OLD RECORD.

Federal Building, Room 443
10 E. Babcock
Bozeman, MT 59715

# Montana
# Basin Outlook Report

Natural Resources Conservation Service
Bozeman, MT